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ORAL LANGUAGE AND LEARNING OF GRADE FIVE STUDENTS IN SMALL-GROUP DISCUSSIONS

by

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Dedicated to my Mom and Dad:

Educators Supreme

ABSTRACT

Language is the major means we use to organize our experiences and thoughts about the world. As we talk, we are externalizing our thoughts in order to give form and content to those thoughts. In this process of shaping our thoughts, the chaos and vagueness of our thinking enters a realm of reality which we can begin to order and control.

The purpose of this exploratory study was to investigate what language grade five students use to learn. To achieve this purpose, twenty-eight students were divided into small groups of four. The groups' oral language was recorded while the students discussed, without an adult present, topics in current events, social studies, science, poetry and mathematics. The language across the five curriculum areas was reviewed for content and form as to indications of learning. The findings were presented in light of recent research and theories into language and learning.

It was found that students responsible for their own learning, are capable of using a wide range of social, cognitive and language strategies in order to make sense of different curriculum topics. The language for learning proved to be the most extensive and varied in social studies and current events. In science, the students seemed restricted by the transfer of scientific terminology to

concrete material. In addition, the use of similes for learning in science was evident. The students' language in poetry indicated a difficulty in the interpretation of the poems that were presented. Some possible reasons for the difficulty of using language to learn in poetry were discussed with the findings. The quantitative nature of mathematics was evident in the type of language used by the students. The students talked extensively in the mathematics sessions and through manipulation of quantitative language, attempted to solve mathematical problems.

In general, the language of the students indicated that they possessed an implicit knowledge of the use of language to learn. The implications of student control of their language for learning were discussed. Finally, suggestions for further research and for the classroom were also discussed.

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Chapter 1

INTRODUCTION

> . . . a body of knowledge (thing) is an accumulated heritage (thing), a built-in conceptual scheme (mechanical) which has structured the attitude of countless men and women, all of them in varying degrees, as the people who structure knowledge and so eliminate these things which are posing as agents? Knowledge would be seen as a process generated by people, not as a force outside them (Hodgkin, 1976, p. 16).

When the child enters school, she brings a knowledge about the world acquired through verbal and non-verbal experiences. A child, as she speaks, is externalizing the representations of reality that she has constructed in her interactions with the world. By externalizing the experiences through speech, the constructions of realities can be acted upon, both by the individual and by others. This explicit representation of 'personal' meanings and 'shared' meanings, in being acted upon by the individual or others, undergoes constant reconstruction of meaning. As construction and reconstruction occur, it can be said that a child is using her language to explore and discover reality. This use of language to learn assumes that the student is 'active' in making sense of the world. The meanings do not come to the child in a passive manner, nor as meanings to be imprinted on a 'blank slate'. The two to three month old baby is already actively searching the environment for meaning, even hypothesizing about events, as suggested by experiments

performed by Bower. Although the search for meaning is indicated by sensory experiences, Bower indicates:

> The infants seem to be testing hypotheses, trying out sequences of movement to discover which one operates at the moment. It thus seems that the pleasures of problem-solving are sufficient to motivate behavioral and mental activity in these young infants. If the learning situation is interactive, the infant will demonstrate that he can learn. . . . (Hodgkin, p. 9).

In school, the curiosity the child possesses about the world is expanded beyond immediate realities to include vicarious meanings. Searle (1981), in stating that "The pupil is faced with the task of reconciling his language to the demands of the school" (p. 164), suggests that the transition from the non-school context to the school context also involves a transition in the language used by the child. As the search for meaning continues, even in a classroom context, supposedly the student attempts to understand the ideas, concepts, and values of the different curriculum subjects. The continuation in school of using language for learning may introduce new realities that widen the gap of understanding between what the child already knows and what the school system deems as necessary for the student to know. This gap between the out-of-school knowledge of the child and the knowledge determined important by the education curriculums may limit or prevent the student use of language for learning. To narrow the gap between the student's present knowledge and the knowledge of disciplines such as science, math, social studies and other subject areas, it seems important, as well as necessary, that the student

continues to use her language for learning. The need to provide an environment for exploratory talk by students, implies a shift in the oral interactions of the classroom that tend to be dominated by the teacher.

Instead of the asymetrical control of the language in the classroom by a teacher, the students may be engaged in a collaborative understanding of the subject being studied. The collaboration of meaning between student-adult, student-peers encourages a heuristic-explicative mode of language for learning.

Webster's New Collegiate Dictionary (1980) defines heuristic as follows:

> to discover, akin to I have found, providing aid or direction in the solution of a problem, . . . of or relating to exploratory problem-solving techniques that utilize self-educating techniques to improve performance (p. 533).

The provision for exploratory talk in the classroom creates an environment where a student can express her knowledge of the subject meanings in light of her present understandings of the world. When the student, through her talk, enters and exists in the different understandings of subject matter content, the teacher is considering the strategies of language for learning. What the teacher may be interested in hearing from the student is not one-word answers, only the 'right' answer or a pre-determined response from the student, but interested in the exploratory attempts from the student using her language for learning. The student needs to assimilate the constructions and

reconstructions of the subject knowledge with her present knowledge of the world. Piaget (1955) would state an individual only learns when the incoming new information is assimilated with the old knowledge the individual has of the world. When the new information and the old world view are modified, refined or completely changed, this process of accommodation indicates that learning has occurred.

Vygotsky (1962), with a different perspective than Piaget on the role of language in learning, agrees with the idea of assimilation and accommodation. The exploratory role of language in learning is clarified by Vygotsky as follows:

> Consequently, the transition to verbalized self-observation denotes a beginning process of generalization of the inner forms of activity. The shift to a new type of inner perception means also a shift to a higher type of mental activity, since a new way of seeing things opens up new possibilities for handling them. A chess player's moves are determined by what he sees on the board; when his perception of the game changes his strategy will also change (p. 91).

Therefore, as the student is using her language to understand the concepts of the different curriculum areas, the meanings are built-up in a web of understanding. Inquiry does not proceed along any hierarchical levels of thought in an ordered sequence. Since meanings do not remain static but are constantly evolving, the language used for learning may appear on the surface as vague, chaotic, and simple strategies. This apparently disorganized use of language for learning is best summarized by Berthoff (1981) as follows: "the chief use of chaos is that it creates the need for dialogue" (p. 72).

However, this seemingly chaotic use of language for learning may be a very ordered attempt to work one's way into the realities of the world.

In order to proceed to higher levels of understanding, it would seem that the student who is using her own language to learn may be found to be at higher levels of understanding than if required to match adult expectations. If allowed to use her own language to learn, without being limited by expected responses of the adult, a student will be able to externalize her understandings in order to construct and reconstruct the web of meanings. When the conceptual journeying comes to a halt or a conflict for the student, then the role of the adult becomes relevant. The language of the adult may now provide further means for the student to clarify, expand or question the ideas. It is this reciprocal role of language for learning that may need consideration in the study of the processes of intellectual development in the classroom.

Purpose of the Exploratory Study

> To explain the higher forms of behavior, we must uncover the means by which man learns to organize and direct his behavior (Vygotsky, 1962, p. 55).

The purpose of this study is to explore how students in a Grade 5 classroom use their oral language to learn about ideas and concepts in five subject areas across the elementary school curriculum.

The purpose is accomplished by:

1) Dividing the class of students into small discussion

groups of three or four members.

2) Presenting each small group with a task in either current events, social studies, science, math or poetry.

3) Recording, on audio-tape, the student's oral discussions of the tasks.

4) Transcribing the audio-tapes for descriptive analysis and discussion.

Significance of the Study

> In the same way, he [the teacher] accepts the hesitations, mazes, circularities and repetitions of his pupils' talk, because he trusts in its ultimate value for the talker. He [the teacher] has, as we suggested earlier, shifted his attention away from the notion of a pre-planned syllabus to which the pupil is fitted, procustes-like, towards a more step-by-step process in which the teacher listens seriously to what each pupil has to say and adjusts his curriculum to what he sees as their necessary directions. It is how his pupils actually do use language, rather than any notion of how they "ought" to use it, that controls both the shape of his teaching, and his attempts to help them use it more successfully (Torbe, 1976, p. 12).

To allow the students to use their language in a classroom setting to externalize their questions and understandings, may provide information on how students use their language for learning. The information gained from the students talking about their knowledge of various curriculum areas may aid the teachers and the curriculum planners in daily and general decision-making regarding 'how students actually understand and where to lead them next'. These decisions may encourage classroom environments more conducive to students using their language to learn.

In their talking, students may also reveal their intellectual development in the processes of higher-level thinking. Educators may discover, as did Barnes and Todd (1977), that:

> . . . children are often underestimated in that they possess skills and competencies which are rarely called upon in conventional classrooms. And this is where the impetus of small group discussion lies, for it is only in this situation that many of these skills are manifested. If they are not drawn on in class, it follows that the teacher may never know that these skills exist (p. ix).

To know how the students are able to manipulate their language to externally represent the reality of the curriculum subjects may be important for instructional purposes. Although the role of the teacher is not part of this exploratory study into children's language for learning processes, it is felt that initital knowledge may reveal strategies that may help the classroom teacher expand and evaluate children's thinking processes without a curtailment of the students 'active making-of-meaning'.

Finally, language-for-learning research done within classrooms instructional contexts may lend further evidence to support the shifts from a teacher-dominated classroom to a classroom in which students and teachers are engaged in a collaborative negotiation of meaning. A teacher may feel insecure or inarticulate about transforming her classroom to allow for more use of student language for learning. Additional information about 'student talk' across the different curriculum areas may initiate and support the

transition from teacher-dominated language in classrooms to a shared control of language for learning between educator and educatee. The significance of an exploratory study into the student use of language for learning may be best summarized by Cahir and Shuy (1981) as follows:

> With all these competing explanations and partial pictures of classroom language learning, what is the message to you as teachers? Information about children's language learning processes and language usage systems provides valuable background knowledge draw on in the daily classroom activities. The linguistic aspects of communcating in all areas of instruction are directly relevant to the act of teaching itself. Also the perspectives and methods evolved for research purposes can assist you in monitoring, planning and evaluating your own teaching strategies. Additionally, these same perspectives and methods do provide you with a more comprehensive framework for observing and assessing your own particular students (p. 373).

Research Questions Considered in this Study

1) What language strategies do the students use that indicate they are organizing their thoughts in order to learn?
2) What is the content of student language that indicates the students are learning?
3) How do students use their language to make sense of the technical language of school subjects?
4) What happens when students can no longer make sense of what it is they are attempting to understand?
5) How does the nature of the task effect the nature of the language used for learning?

Limitations of the Study

1) The small sample will necessitate caution in generalizing or extrapolating from the results since the study is limited to one classroom of students.

2) The nature of the tasks set by an adult may limit the intellectual processes of the student although the students may be capable of generating higher level processes than those which they produce in this study.

3) The students' language used for exploratory learning may be vague, chaotic, and inferential. This apparent disorganization of speech may present a limit to the validity of the data analysis.

4) The social and cognitive group dynamics of using language to learn may inhibit linguistic participation by some individual group members.

5) A limited time was available for organization and participation in each of the group sessions. The participants may have felt limited by time and also the presence of a tape-recorder.

Assumption of the Study

> The child's intellectual growth is contingent on his mastering the social means of thought, that is, language (Vygotsky, 1962, p. 51).

The major assumption of this study is that the processes of intellectual development are manifested in the social means

of human thought, i.e., language. Thus, the language of students will indicate what processes of thought the students are capable of using in order to be actively learning.

Organization of the Chapters

Chapter 2

A summary of the research about what is generally occuring concerning language and learning in the classroom will be presented. The implications of the research about classroom language for learning to date, will lead to a discussion of the issues of knowledge and control in the classroom setting. Finally, major theoretical viewpoints will be discussed to frame the qualitative descriptions of the transcribed data.

Chapter 3

The setting of the study will proceed from an overview of the classroom context to profiles of the procedures and the participants of the study. Finally, a description of the data collection and treatment of the data will follow.

Chapter 4

The qualitative analysis of the study will attempt to describe the phenomenon of the transcribed recordings of the small group discussions. The treatment of the data will be based on theoretical frameworks and also the findings of similar research studies.

Chapter 5

The final chapter will discuss the main ideas of previous chapters and draw conclusions from the findings of the study. Implications for further research and classrooms will end the chapter.

Chapter 2

A REVIEW OF THE RESEARCH AND THEORY

Research Into the Language of the Classroom

> Father heard his Children scream,
> So he threw them in the stream,
> Saying, as he drowned the third,
> "Children should be seen, not heard!"
>
> (Harry Graham 1964, p. 118)

Over the years, research into the language of the classroom has revealed common patterns of oral interactions. What these discourse patterns are and how they affect the learning environment of the classroom are crucial questions to consider. If language is being used in the classroom, what is the structure and content of the language used for learning? Supposedly teacher and pupils are engaged in maximizing an understanding of the curriculum of the classroom. Images abound as to the ideal classroom being a place where "Children should be seen, not heard." Even mass media creates the images of ideal classrooms where the setting is so quiet, the teacher can hear a box of raisins being shaken at the back of the room. If a classroom is noisy, the teacher gets headache number 10. What myths and realities exist in the classroom language used for learning has raised questions to be answered by the researchers of classroom interactions.

As early as 1904, Hoyt found that the teacher talked 80 percent of the time. The available techniques of the time

probably limits the data collection to a recording of the amount of talk. Yet this early research already was indicating a pattern of teacher-dominated language in the classroom. Pooley (in Klein, 1977) mentions that in the 1940s he found:

> In both city and rural schools teachers tend to dominate the classroom more than they should, despite the many opportunities that oral English instruction provides for permitting pupils to plan, direct and evaluate their own lessons. Panel groups, round tables, club meetings, dramatizations, and prepared programs - to cite a few of the devices that have been used with real success - were only very infrequently observed. Teachers dominated 83 percent of the oral English lessons in rural schools and 62 percent of those in city lessons (p. viii).

The questions asked by Hoyt and Pooley seem to be "who talks and how long?" Other researchers asked these same questions but extended the questions to include frequency as well as the language patterns of oral interaction. Flanders (1970) not only observed the frequency of classroom talk, but observed the types of language behaviors that existed. By recording the classroom talk every three seconds, Flanders found that:

1) Sixty-eight percent of the classroom talk was by the teacher asking questions and giving feedback to the students' answers.
2) Twenty percent of the classroom talk was the students' responses to the teacher's solicitation questions.
3) Twelve percent of the classroom talk consisted of silence and confusion in the classroom.

The predominance of teacher talk is noted by Flanders and also the observation that a pattern of interaction exists. This pattern is teacher solicits ⟶ pupil responds ⟶ teacher gives feedback. To consider Jackson's (1968) observations, that approximately 70 percent of the 1,000 hours per school year are spent by students listening to a teacher talking in a "standardized, routine pattern", tends to confirm the teacher-domination of frequency and pacing of classroom language.

Further analysis of classroom talk was explored by Delamont (1976). She extended the frequency of talk to include the category of the quality of the talk. Delamont claims that 50 percent of the teacher's speech is spent in direct instruction and the remaining 50 percent consists mostly of disciplining and controlling moves. In primary classrooms, according to Boydell (1974), two out of five statements heard by students, focused on organization and discipline. Hughes (in Delamont, 1976) found that not only do teachers rarely expand students' ideas or respond personally to the students' ideas, he also found the 40 percent of the teacher's actions fell into the controlling category.

A major study of language in classrooms was conducted by Bellack et al. (1966). Like Flanders, Bellack discovered that the teacher requested an answer (over 50 percent of the time) and the pupil responded (over 10 percent of the time) and this pattern was extremely common. Unlike Flanders,

Bellack extended his research to describe what types of solicitations and responses appeared. The teachers' requests were categorized as follows:

1.	Empirical	- fact stating explaining	- most common one-half requested this mode of thought
2.	Analytic	- defining terms interpreting	- only appeared one-fifth of the time
3.	Evaluative	- opinioning justifying	- least of all <u>if</u> at all

From this format, it is shown that very little personal input is expected of the pupils and to succeed the student need only give a factual answer; use one or two words; but be sure the answer is correct. Furthermore, according to Bellack the rules for structuring a lesson are initiated and controlled by the teacher which restricts the amount of pupil input, pupil interest, pupil knowledge and pupil learning. In the feedback responses, 75 percent of all the teacher's reaction to a student's answer involved rating it either "right" or "wrong" (p. 246). Overall, the teachers in Bellack's survey initiated and controlled 85 percent of the discourse cycles.

As a followup, Bellack attempted to speculate why teachers consistently copy this common pattern of interaction, proposing that:

1) Teachers believe this pattern to be the most effective technique for facilitating learning that has evolved through years of usage.
2) Teachers think pupils will be bored if they lecture.

3) If more time is devoted to pupil's reacting process, learning might degenerate into a sharing of ignorance.

4) Students 'learn by doing' so the teacher must stimulate and guide 'the doing'.

As the research questions being asked about language in the classroom kept being answered as to frequency, control and quality of language, further research was asking new questions and requiring new methodology. Researchers were shifting from behavioral observations to research involving, for example, psycholinguistics, sociolinguistics, cognitive and social psychology. In his article Implications of Teacher Strategies for Language and Cognition, Mishler (in Cazden et al., 1972) argues that what teachers say and how they say it creates a particular kind of world for pupils. By analyzing the verbatim accounts of teacher-pupil exchange, he discusses whether the language style of each teacher encourages or discourages the learning of different cognitive strategies by the students. One teacher is able to connect the information from the flow of the discourse that leads the student from concrete to abstract; from particular experience to personal experience; and enables the students to switch back and forth across different levels of abstraction. Another teacher:

> . . . generated a sequence of random guesses. . . . There is no connection among the answers, information does not accumulate, the sequence in which the answers are produced has no significance, and the children have no basis for knowing whether they are closer to the

> correct answer at the end than at the beginning to the episode. The children have introduced content in an ad hoc way, either from other experience or from immediate environment (picture on wall). The process also seems to obscure certain logical relationships that might be helpful to an effective search procedure. . . . This teacher is engaged in a convergent process in which there is one correct answer (pp. 278-279).

This quote seems to suggest that the teacher's use of a certain style of interaction can inhibit learning in the classroom. Although the teachers appear to be creating a language for learning environment that expands the thinking of the students, Mishler's research from verbatim protocol suggests that the language pattern chosen can make a difference to the learning and cognitive development of the child. Mishler elaborates on his findings by asking teachers to consider language for learning with the view about:

> . . . how they elicit; and use individual experiences as material to be shared with the group and the degree to which they explicitly focus on the class as a group. whether the language does/does not invite the child to elaborate or clarify the statement, whether she tends to close off the possibility of further report and limits what the child might bring into the situation from outside the classroom (p. 294).

The research seems to indicate a predominant classroom language pattern of:

teacher question ⟶ student response ⟶ teacher feedback

This prevalence of the initiation of the interaction pattern with a teacher question, led other researchers of classroom language to study the nature of the teacher questions and the subsequent effect on the student's response. Barnes et al.,

(1969) describes the demands made on students by the teachers' questions and how these questions limit a pupil's reply to a narrow range of alternatives. Most of the questions asked in classrooms tend to require:

1) One-word factual replies.
2) No expansion or explicitness of students' answers.
3) Student answers for which the teacher only accepted her predetermined 'correct' answer.
4) Student responses which infrequently, if ever, required first-hand experience or personal knowledge.

In a 1977 study, Barnes and Todd call this questioning technique used by classroom teachers to solicit one-word, correct answers from the students, as the "information matching game" (p. 114).

The questioning technique used by teachers is found to exist in all subject areas across the curriculum, including science and English (Barnes, 1971; Sinclair and Coulthard, 1975). Furthermore, the interaction pattern also is found to exist in most children's home environment. However, at home, the child was often the initiator, and the parental response encouraged elaboration, clarification and 'meaning in context'. Wells et al., (1981) in a longitudinal study of children's oral language for learning in and out of the school context, confirmed the triad pattern of interaction existed yet at school the child is faced with:

a high proportion of teacher utterances that are

> questions and of these what a very small proportion are questions to which the teachers do not already know the answer . . . and only one answer is acceptable (p. 24).

Edwards (1981), commenting on the study of Wells et al., summarizes the findings of the Bristol Language Project. Edwards explains that:

> The significant evidence to come from the Bristol Language Project is that many typical classroom exchanges, such as closed questions preceded by clues as to what an appropriate answer might be and followed by the correction, extension or reformulation of the child's response were commonplace in almost all the homes where recordings were made. The main differences seemed to be those of frequency. Teachers asked more pseudo-questions and corrected more rigidly and commented more often on adult utterances in their home than in their school. Such differences suggested that the asymmetrical structure of adult-child interaction is intensified in the classroom, with a consequent narrowing of the communicative options open to children (p. 4).

A survey of classroom questions by undergraduate students (in Lindfors, 1980) showed there is a dramatic change in the type of questions asked by students from the preschool level to the intermediate level (p. 250). The change in student questioning across the grade level is indicated in Table 1.

In Rowe's study (1974), teachers were found to; typically ask two to three questions per minute, seldom paused for more than one second to await student answers, and demand short answers from students. Heath (in Lange, 1981) supports the research findings into the questioning procedures of the classroom. She observes that:

> . . . teachers unconsciously focus on questions that require only brief answers from students when the

Table 1

Questions Asked by Students

	Curiosity Questions	Procedural Questions	Social-Interaction Questions
Example:	What do he like to eat?	How many pages do I have to read?	Are you taking mine?
Pre-School	33%	23%	45%
Primary	19%	66%	14%
Intermediate	16%	68%	16%

> discussions are led in general classrooms. On the other hand, teachers in small-group work tended to stress other types of questions that expanded student talk and required more creative answers from students (p. 731).

It appears from research into classroom language that the use of heuristic-explicative learning strategies by the students is infrequent and limiting.

Other researchers have found the language of the classroom questionable as to the learning that is happening. Kluwin (1979) reports that:

> English teachers talk for somewhere between 50 to 70 percent of class time, while student talk comprises between 20 and 30 percent of class time. Pupil responses to teacher questions account for 20 percent of class time. The teacher's follow-up to the students' responses is quite uninteresting, tending to be monosyllabic, idiosyncratic and communcatively hollow (p. 614).

Hughes (in Barnes, 1976) criticizes the avoidance of students' use of language for learning. She found that:

> Students' questions, explorations and personal experience were most frequently rebuffed or ignored. Little attempt was made to build generalizations, ask for comparisons, look at alternatives, or look at consequences (p. 173).

However, since research seems to be saying that teachers have a generally accepted pattern of classroom interaction, an awareness of the limits to learning produced by the accepted pattern may need to be reviewed. From the teacher's viewpoint of oral language for learning, Winkeljohann (1978) found that:

> In a survey of 500 classroom teachers, many teachers believed their college course in language arts had not prepared them to encourage the development of children's language. The results show that teachers were not

> clear on the purpose of oral language, that they did not understand the relationship between oral and written language, that most of the teachers worked in schools that did not have an oral language curriculum, and that generally little attention was paid to the oral language of children as long as they could answer teacher's questions (p. 9).

Further research expands the notion of language for learning as more than just cognitive development. There seems to be implicit information in the language of the classroom which Mishler states as follows: "Specific cognitive strategies and social values are manifest in how a teacher talks to and responds to pupils" (p. 269).

Hymes (in Edwards, 1982) supports the cognitive and social aspects of using language for learning in the classroom. The research of sociolinguists into classroom language for learning, assumes, as Hymes remarks: "What is at stake is not logic or rationality, but what we think of each other and of ourselves" (p. 1). Thus, Searle (1981) has found that the values and knowledge that students possess in out-of-school contexts, is not usually considered as important as the values and knowledge of the in-school context. The research seems to indicate that the language used for learning ignores the 'lived-world' that the child brings to school. To eschew the language the student needs to use for learning, is like avoiding the student herself.

The shift in research questions takes the earlier quantitative research beyond Flanders and others. The questions into the language of the classroom, at present, appear to be concerned more so with processes of

development and less with the product orientation of behavioral research. Learning strategies seem to be considered as well as the context of the actual classroom setting where language is supposedly being used for learning. What recent research seems to be asking is whether students are expanding, clarifying and critically questioning their worlds, or whether, as Edwards and Furlong (1978) suggest, the pupils may be spending time 'making sense' of the teacher's world instead of their own. As the language patterns of classroom research seems to suggest, the pupils may even have to suspend their perspective on the world to try to work on the teacher's. Perhaps researchers and classroom teachers need to reflect on the language used for learning in the context of the classroom.

Summary of Classroom Research Into Language for Learning

From the earlier findings of research into the language of the classroom, indications seem to be that the teacher dominates the pacing and the quality of the student's learning. This dominance of teacher control of the learning is evidenced in the following ways:

1) The amount of teacher talk compared to the amount of student talk.
2) The teacher initiation of the language for learning.
3) The limits on the student's active participation in making sense of the school curriculum.

4) The quality of the language interactions that inhibit expansion, clarification and critical thinking by the students.

The evolution of classroom research into the use of 'language for learning' appears to be asking different questions such as:

1) What social and cognitive strategies are available for students in using their language for learning in the classroom?

2) What shifts need to occur in oral interactions between the teacher and students? Why?

It appears that new questions as to the language of the classroom continue to be asked. The findings of these questions may provide evidence to support new perspectives about the language used for learning available to educators and curriculum planners.

Implications of Classroom Research Into Language for Learning

Students for today's lesson
I
want you
to write on the Roman Empire
If you don't
You are not going to get a grade
or a future job
or any Respectable
place in life

Teachers for today's lesson
I
want you
to think on the Human Soul
Here
If you don't
You are guilty

or Murder
every day
as
You play
Axman
for the King
Your King
of minds
in the Righteous Name
of knowledge

You there Boy
come here
You've got to be smart
son
You're going to learn to think
our way
It's the only way we're going to teach you
then when
you're old enough to know
we're wrong
You'll have to think
about it
Our way

Bruce Doyle (1974, p. 76)

The research and discussion of knowledge and control tends to present a picture of a rather limiting use of student language for learning. The domination of teacher talk, the control of the interaction pattern by the teacher, the implicit realization by students that the teacher is the possessor of knowledge, all accumulate to strongly suggest that the reality of the classroom is a struggle for students to draw out the right knowledge held only by the teacher. Apparently, as earlier research findings indicate, these adult control techniques have existed in the language of the classroom for many decades. This control of curriculum knowledge by the adult and the limiting of student knowledge may not be questioned as dehumanizing or damaging to the

social and intellectual growth of the student. What supposedly has been a necessary and successful means of using language for learning, may remain as the classroom use of language until the issues of teacher control of knowledge and language are discussed. The key questions are:

1) What are the implications of teacher control of the language used for learning?

2) What alternatives to the present language patterns of the classroom need to be considered in view of each student's 'right to learn'?

Young (1971), in emphasizing the necessity to make the sociology of knowledge in education more explicit, introduces the direction that the 'knowledge and control' issue may pursue by stating:

> It is necessary to examine first in more general terms the implications of a meta-theory or doctrine of control, and secondly what is involved in treating the knowledge (transmitted in education) as neither absolute nor arbitrary, but as 'available sets of meanings' which in any context do not merely 'emerge' but are collectively given (p. 3).

A 'doctrine of control' seems to be implicit in the research findings of classroom language for learning, a control that seems to limit the student's freedom to use her language to learn. The research seems to further indicate that teachers <u>do</u> treat knowledge, their knowledge, as absolute. The students' educational success is determined, so it seems, on how well they can 'guess' what knowledge the teacher controls. Furthermore, whether or not the students have 'available sets of meanings' appears irrelevant in

allowing students to use their language to learn.

Keddie (in Young, 1971), after an investigation into the classroom control structure, states that two major 'implicit' rules govern the interactions in a classroom:

1) What knowledge teachers have of the pupils.
2) What counts as knowledge to be made available and evaluated in the classroom (p. 133).

If continuous 'implicit' knowledge about her pupils is assumed by a teacher, based on the language with which the student responds to teacher questions, several consequences may arise. Since student responses are mainly one-word, guess-the-answer replies to a teacher-initiated question, it may be that the students who learn to play the 'pedagogical guessing game' well enough, are deceiving the teacher. Those students who continuously reply with the 'correct' answers may in fact not be clear about their understanding of the answer. The teacher may claim them as the students who are learning in spite of the students' lack of understanding about the classroom knowledge. On the other hand, those students who can not decide what the exact reply is; or those students who need further clarification of the teacher's questions; or those students who have an 'alternative set of meanings' about the exact answer; or the student who chooses to remain silent for other reasons, may be judged to be below-average, slow or even a failure. These factors seem to be controlled by the teacher's language interactions with her students.

The second rule that governs oral interaction in a classroom, according to Keddie, raises the issue of 'what counts as knowledge?' Again, as research suggests, what counts as knowledge is that which the teacher already possesses, mostly in the form of facts. Therefore, the knowledge the student brings to the learning context (previous experiences, personal opinions, etc.) is not to be considered important or necessary to the students using their language to learn. Since the teacher controls the content of the knowledge in a classroom, it appears that students may submit to her initiations-for-response in order to succeed in school or avoid labeling. Perhaps what students are really learning in school is to leave their knowledge of the world at the front door of the school, since it does not 'count' in school as knowledge.

Bruner (1962) makes a distinction between a teacher control of language for learning and a shared teacher-student pattern of language for learning. Bruner's terminology, the expository mode and the hypothetical mode, describe in whose power lies the control of knowledge in the classroom. In the expository mode, the teacher is seen as making the decisions about the mode, the pace, and the style of the classroom language used for learning. In the hypothetical mode, the student and teacher are exercising a cooperative use of language for learning. In the hypothetical mode, the students are continuously using their language to work their way into the meanings of the curriculum.

However, as researchers into classroom language are discovering, teachers seem reluctant to allow students to formulate knowledge for themselves, nor are students encouraged to use their language to take control of their own learning. Using language to learn appears to be entirely dependent on teacher control.

As discussed previously, linked in with the concept of teacher domination of language for learning and the classroom control that the teacher apparently exercises, is the problem of what counts as valid knowledge in the school. Since knowledge is also a social representation of reality, it would be obvious to say that learning in general is a social activity. The larger culture outside the classroom can place demands upon learning and therefore upon the language program. If the greater world outside needs to 'transmit' knowledge to the classroom, further limitations will be placed upon the use of students' language. The organization of programs will be viewed as a 'transmission' of knowledge and in turn see the teacher as the possessor of the knowledge to be 'poured' into students. Barnes (1976) has developed a format that lays out the relationship between the transmission of knowledge by teachers and the interpretation of knowledge. Table 2 describes the model of classroom knowledge developed by Barnes.

If one chooses to view the classroom as a transmission model, the amount and type of language will be controlled by the teacher with little opportunity for a student to get at

Table 2

Barnes' Model of Classroom Knowledge

	Relationship	Transmission of Knowledge	Interpretation of Knowledge
1)	The teacher's view of knowledge	The Transmission Teacher... 1. Believes knowledge to exist in the form of public disciplines which include content and criteria of performance	The Interpretation Teacher... 1. Believes knowledge to exist in the knower's ability to organize thought and action
2)	What the teacher values in his pupils	2. Values the learners' performances insofar as they conform to the criteria of the discipline	2. Values the learner's commitment to interpreting reality, so that criteria arise as much from the learner as from the teacher
3)	The teacher's view of his own role	3. Perceives the teacher's task to be the evaluation and correction of the learner's performance, according to criteria of which he is the guardian	3. Perceives the teacher's task to be the setting up of a dialogue in which the learner can reshape his knowledge through interaction with others
4)	The teacher's evaluation of his pupils' participation	4. Perceives the learner as an uninformed acolyte for whom access to knowledge will be difficult since he must qualify himself through tests of appropriate performance	4. Perceives the learner as already possessing systematic and relevant knowledge, and the means of reshaping that knowledge

meaning and understanding of her world or the world of others, only to the world of the teacher. The language program of the interpretation model encourages the students to use their language to expand, clarify and question the knowledge of the world. In the interpretation of knowledge model of learning, the control of the language of the classroom would appear to shift from a teacher-dominated language pattern to a 'shared-world' use of language for learning between teacher and student.

Bernstein (1965) generated his theoretical stance in response to the high rate of educational failure among lower-class students. In his theory of restricted and elaborated codes, he claims that the linguistic, socialization process in which lower-class students have undergone, limits the flexibility, the expression and the introduction of new information through verbal means. The users of the 'elaborated' code, which for Bernstein generally were middle-class students, were socialized in an environment that encouraged elaboration of meanings and clarification of questions and ideas. The dichotomy of the two codes developed as an explanation that lower-class students are unable to face the kinds of verbal learning tasks required in schools, whereas the middle-class students can respond successfully to the language demands of the classroom. Intensive language programs were initiated, employing Bernstein's theory. Head Start, Distar, Follow Through to

mention a few, were attempts to 'educate' the disadvantaged through language 'skills' and early intervention techniques, and prepare them for school.

However, language is a socially determined phenomenon. Given an informal, familiar context, Labov (1972) found that lower-class speakers and speakers of non-standard English (specifically black children in inner-cities) are not verbally deprived as suggested by Bernstein. Labov found that:

> They [black children] have the same basic vocabulary, possess the same capacity for conceptual learning and use the same logic as anyone else who learns to speak and understand English (p. 201).

In The Myth of the Elaborated and Restricted Code, Jackson (in Cosin, 1971) supports findings such as Labov's. A social context not only is a condition for learning language, it is a constraint on language use. As should be clear from Labov's findings, Jackson claims:

> In the new order, for a code to be restricted means: that there is a restriction on the contexts and on the conditions which will orient a child to universalistic orders of meaning, and to making those linguistic choices through which such meanings are realized and so public. It does not mean that the children cannot produce at any time elaborated speech in particular contexts. On the other hand, because a code is elaborated, it does not mean that in some contexts, under specific conditions a speaker will not use a limited range of modifiers, subordinations, etc., but it does mean that such choices will be 'highly context specific' (p. 169).

Other 'context-specific' research by Searle (1981) and Tootoosis (1982) exemplifies the effect of social situation on language production. At a boys' and girls' club in a lower-class area of London, Searle found several participants

expressed values about reality that disclosed an elaborated code using generalizations and abstractions, both about their immediate world as well as the world removed from their concrete reality. Tootoosis, recording the language of a five-year-old child, observed extensive accounts of language, which in out-of-school contexts tended to be elaborated, yet in school, the language interactions of teacher and pupil were of the restricted code.

Edwards' (1981) concern about the student use of language in the classroom is "how they [the children] are required to communicate in classrooms" (p. 8). As found by Cooper (1976), Dillon and Searle (1981), Eggleston (in Edwards, 1981), Walker and Adelman (1972), and Atkinson and Delamont (in Hammersley and Woods, 1976), the classroom appears to be predicated on the 'restricted' code for all students, regardless of their socio-economic status. Edwards (1981) also disagrees with Bernstein that:

> the classroom is normally 'predicated upon elaborated codes' and their system of social relationships. Making deliberate reference to his own analysis of open and closed roles, I would typify meanings in the 'regulative context' as being realized largely through imperatives and through positional appeals in a restricted code, and describe pupils as having to 'step into' a predetermined set of 'instructional' meanings and leave it relatively undisturbed. It is surely an unusual classroom in which pupils find frequent opportunities for 'disturbing or changing' a body of received knowledge, and so of 'achieving meaning' on their own terms (p. 294).

In The Neglected Situation, Cazden (in Searle, 1981) defends the position of the student. She feels that:

lack of attention to situation means an inadequate picture

> of the language competence of students has been created and that the notion of language inadequacy becomes in itself, inadequate (p. 26).

Walkerdine (in Wells, 1981) believes that the student's interpretations are unique and complex, yet underestimated by the adult's inability to: "gain access to the categorization procedures in operation, rather than because the child is making non-sense" (p. 201).

Connie Rosen (1973) shows how primary children, left on their own in the classroom, are able to 'make-sense' through their language interactions during play. How teachers can be fooled into believing students have understood the language used either by themselves or the teacher is evident in an article by Martin (1971). During a lesson in class, the students write about different rock formations. The technical term 'porous' is used by two boys in their writing. Later, in a room removed from the class context, the two boys are discussing their writing. A researcher is listening to the two boys discuss their written work. As the two boys explore the meaning of porous, both they and the researcher discover the boys are not clear as to the actual meaning of 'porous' in the context of the written assignment. Through their discussion of the word 'porous', the meanings of the word were not only discovered to be vague, but the talking helped the boys to expand and clarify their understanding of a word - a word the teacher assumed the boys understood simply because they incorporated the term in their writing. Releasing the control of the boys' language for learning, the

teacher's assumption that they understood the word was found to be incorrect when the boys used their own language to learn.

When the control of knowledge in the classroom or what counts as knowledge is explored, the implications can be considered as socially constructed. As with the two boys in the lesson on rocks, the teacher and the students used their language to create what was assumed to be 'shared-meanings' of the word 'porous'. Young (1971) points out that:

> . . . in the interactions in a lesson between teacher and pupils, these shared meanings are taken for granted as sets of unquestioned assumptions; however, like all shared meanings they can be treated as problematic and become the objects of enquiry (p. 5).

In a more ideological sense, the implications of the control of students' use of language to learn raises the issue of knowledge and control of learning by the bureaucratic and political structure. If the students are accepting of the pedagogical control of their language for learning in the classroom, it may be they will be non-critical and accepting of the knowledge given by others, in spite of what that knowledge is. The bureaucratic, hierarchical levels of control are not a benefit enjoyed by students. For whatever reasons the educational structure has felt it necessary to limit the use of student language for learning, the research implies that the student's 'freedom of speech' is controlled by the educators and the curriculum designers. The idea of the 'hidden curriculum' is subliminally revealed in the research into classroom language.

The explicit reasons for maintaining the control of knowledge and language in the classroom may be justified by accountability, need for discipline of students, lack of 'what-counts' knowledge by students, increasing local and national test scores, or even the needs of the job market. These reasons and many others have created the structure of the knowledge control in classrooms. To maintain that structure, arguments for increased language use in the classrooms by students may prove to be futile. To shift control for making sense of the world realities by encouraging student talk for learning in the classroom, may threaten the very structure that teacher-dominated interactions are meant to maintain.

Friere (1973) expands on the implications of the issue of 'implicit' control of knowledge. He, and others such as Apple (1979), feel that education is not a neutral event. It serves the needs of a political world into which the students must someday enter and to which they must conform. Friere indirectly discusses the control of language for learning as follows:

> The relationships between invader [the educator] and invaded [the educatee] are situated at opposite poles. They are relationships of authority. The invader acts, the invaded are under the illusion that they are acting through the action of the other; the invader has his say; the invaded, who are forbidden this, listen to what the invader says. The invader thinks, at most, about the invaded, never with them; the latter have their thinking done for them by the former. The invader dictates; the invaded patiently accept what is dictated. For the cultural invasion to be effective, and for the cultural invader to attain his objectives, the action must be supported by other complementary

> actions, ones which constitute different dimensions of the anti-dialogue theory. Thus, any cultural invasion presupposes conquest, manipulation, and messianism on the part of the invader. It presupposes propaganda which domesticates rather than liberates (p. 113).

To conclude, the political implications of the control of language for learning need to be seriously considered when classroom domination of language and knowledge is shifting from teacher to students.

The Need for Student Talk in the Classroom

If a major shift in the classroom interaction pattern of the teacher-dominated, student-restricted code is to occur, then the emphasis will be on a more cooperative, adult-child interaction. The students will need more opportunities to use their language. "The point is not the experience but the language it makes possible" (Medway, 1975, p. 67). A purpose must be provided, as must time and context, that encourages the student's use of language for learning. Why?

One of the major exponents of talk in the classroom is Britton (1970). In his book Language and Learning, Britton states:

> Language, we are told, is rule-governed behavior; as we represent experience in words we submit it to the rules, we bring to bear upon it the highly complex relationships systematically embodied in language itself. The process begins though as we shall see, it does not end in talk (p. 28).

He feels we exist in the world, not as mere physical entities, but as 'animal symbolicum' (p. 13). Language

allows us to represent the world, map-out our existence in it. We each experience our life in the world differently, we learn differently about it and language is a way of representing reality to ourselves. Gusdorf (in Nystrand, 1977) says "naming brings into existence."

Reality does not come to us purely through sensory perception, as Hume's (1956) philosophy suggests, but mainly through the instrument of language. Britton feels that:

> As people talk, each is relating the event to his own experience, his own world, creating his own personal context for it. In doing so he is using talk to add the new event to a body of experience that exists very largely as the outcome of similar talk on past occasions (p. 30).

Because of the uniqueness and variety of experience which each individual encounters, the interpretations of each event is constantly undergoing revisions. The language-user is able to construct not only reality, but through talking about the events, able to order it, generalize about it, explain it, reflect upon it and change it. This construction and reconstruction is possible through other systems; i.e. art, dance, religion, culture, but it is oral and written language that is the major system.

Britton's model of language activity for learning originates with the expressive mode and moves on a continuum between the transactional and the poetic. Although in his study (1975), Britton discovered that most of the student language occurs in the transactional mode, he feels classroom activity should provide experiences conducive to all styles

of language. The categories of the model represent the language patterns that Britton considers relevant for learning. The diagrammed model and its categorical meanings are as follows:

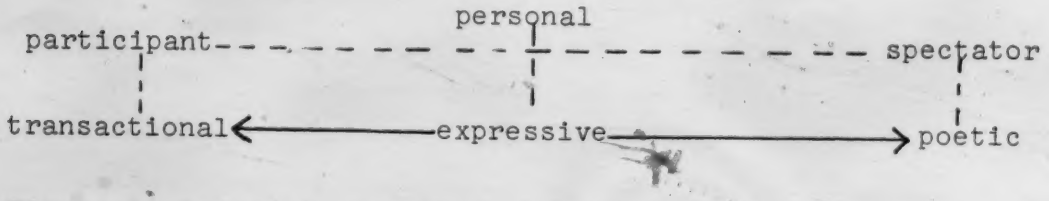


Figure 1: Britton's Model of Language Use

Table 3

Categorical Meanings of Britton's Language Model

Mode	Function	Role of Person	Range
Transactional	- to get things done - enables a person to act on his environment	participant	- ask questions - give directions - scientific theories
Poetic	- speculation - values - re-experience - add new perspectives - examine experience	spectator	- gossip - literature - metaphors
Expressive	- intimate - personality of speaker - immediate preoccupations	natural expression	- rehearse new experience - personalize experience - lead in to generalized actions

Others share Britton's hypothesis about the need for talk. Blumer (1969), uses the position of a major symbolic-interactionist, George Herbert Mead, to summarize the implications of language as follows:

> With the mechanism of self-interaction the human being ceases to be a responding organism whose behavior is a product of what plays upon him from the outside, the inside or both. Instead he acts towards his world, interpreting what confronts him and organizing his actions on the basis of the interpretation.
>
> As the illustrations show, the process of self-interaction puts the human being over against his world instead of merely in it, requires him to meet and handle his world through a defining process instead of merely responding to it and forces him to construct his action instead of merely releasing it (p. 12).

Talking allows students to "feel their way into a meaning" (Barnes, 1974, p. 250). In the spoken or written process of composing, we learn the chaos of thought. Wells (1981) hopes for a style of classroom interaction that is conducive to the aims of education and contributes to the independent, active and inquiring attitude of student learning (p. 27).

For the student, talking is important for learning, clarifying concepts and extending her knowledge of the world. Furthermore, language as a way of knowing can release students from the confinement of conceptual boxes, transcending the presently held reality. Language can elevate the vagueness of thought, to precision in thought and finally to higher level generalizations - a return to the 'logos' of reality from the 'doxa' of reality. Thus language needs to be provided for and by the learner to enable a

'transcendence' of reality, preventing what Whitehead (1929) refers to as 'dead' knowledge. Several systems of transcendence are available - religion, art, poetry, science, literature, metaphor, illusion, music - yet in each of these areas it is mainly oral and written language that releases the learner to exploring, discovering and knowing the truths of the universe. Language must be rooted in meaning, even if it appears chaotic, vague, esoteric and sometimes inaccurate.

The prevention of being locked in by 'conceptual boxes' or lack of understanding of concepts means it is necessary for students to use their language in a heuristic-explicative manner. Students' language must create not only the meaning of reality, but discover the gaps in meaning. For a student, learning through her use of language in oral interactions with adults and peers, it is the active use of language that pushes the intellect beyond the frontier of her present understanding. Roszak (1972) illustrates this "rhapsodic intellect" as follows:

> I mean by this a ready awareness of resonance which never lets an idea or action, an image or natural object stray from its transcendent correspondence. Such an intellect loses none of its precision, need sacrifice none of its analytic edge. But it remembers the visionary organs of culture when all things were, as they still might be, symbolic doorways opening into the reality that gives meaning (p. 395).

The preceeding discussions of philosophers, theorists, researchers and practitioners of language, emphasize the need for student talk, especially in the classroom environment where learning is the aim. Until the student is involved

in a curriculum that encourages her language use for learning, the education of the child cannot be fully realized. Perhaps Friere (1973) summarizes the need for heuristic explicative talk in stating that:

> True humanism, which serves human beings, cannot accept manipulation under any name whatsoever. For humanism there is no other path than dialogue. To engage in dialogue is to be genuine. For true humanism, to engage in dialogue is not to engage without commitment. Humanism is to make dialogue live. Dialogue is not to invade, not to manipulate, not to 'make slogans'. It is to devote oneself to the constant transformation of reality (p. 114).

What Happens When Students Talk or Listen?

The arguments for student-use of language in the classroom may appear to be based on subjective logic. However, scientific evidence is given by Vygotsky in his experiments on thought and language, evidence that speech is the element that frees the human mind from the biological dependence on development. Both the behaviorist and the naturalist position on the role of language is constrained experimentally, and is unable to explain the development of language and thought as regards the higher psychological processes. Vygotsky's theory realizes the methodological problems of the stimulus response or naturalist framework as well as explains in detail the role of language in thought. Vygotsky (1962) states that his experiments: "While admitting the influence of nature on man, asserts that man in turn affects nature and creates through his changes in nature new natural conditions for his existence" (p. 60).

His dialectical approach to language and thought demands that the human needs to be engaged in talking before authentic conceptualization of reality can be internalized.

Piaget (1929) observes that the child works on her perceptions of the world with autistic thought. The child, to Piaget, then works on her conceptual reality, using egocentric speech - the concept comes first, then the language follows. Lastly, it is social speech, interaction with others, that is the final stage of thought in Piaget's theory. However, this development theory does not explain how the child reaches the higher levels of thought. Piaget's assumption would appear to be that the higher psychological processes are internalized by children, dependent on biological development ('when they are ready for it' process) and independent of a socio-historical transformation. Also, for Piaget, language plays a very minute role in the process of intellectual development. Thus his theory, as well as the behaviorist's and the naturalist's, are limited in explaining the higher thought processes of humans.

To experiment with a socio-historical theory, Vygotsky, using a series of problem-solving exercises with blocks, was able to show how children move from perceptual thought to conceptual thought. The processes are shown in Table 4.

Therefore, in Vygotsky's theory, language is the key element in developing the higher level thought processes. The social and historical interaction of the child with adults and peers, moves the thought of the child from random

Table 4

Profile of Vygotsky's Processes of Higher Psychological Thought

Process	Block Activity	Thinking	Purpose	Language
syncratic	no basis for grouping	- in images - scattered impressions - beginning of primitive thinking	perception	- one word expresses whole thought - is socially directed
complex	associative - grouping based on single attribute from one block to next collection - start with one attribute (i.e. color), adds one of each color chain - add each block on same attribute, then add new attribute to last block pseudo-concept appears to be grouping on generalizations but is not (move on either-or relationships	- synthesis or analysis but not both - in concrete bonds - is first stage of abstraction - beginning to categorize - spontaneous	- begins unification of scattered impressions - base for later generalizations - basis for bonds and relationships in true concept development	- transitional language - turn to adult and verbally describe the problem they cannot solve - accompanies child's actions - is reflected in a disrupted and chaotic form

(Table 4 - continued ...)

Process	Block Activity	Thinking	Purpose	Language
concepts	- grouping based on one general trait	- in logical bonds shifting from concept to complexes and - scientific	- true abstraction - beginning of internalization of thought	- can use concept but cannot express that concept in words

activities to logical reasoning. This process of languaging is never static, as the meanings of the concepts are constantly evolving. Vygotsky confirms this idea, stating that:

> The leading idea in the following discussion can be reduced to this formula: the relation of thought to word is not a thing but a process, a continual movement back and forth from thought to word and from word to thought. In that process the relation of thought to word undergoes changes which themselves may be regarded as development in the functional sense. Thought is not merely expressed in words; it comes into existence through them. Every thought tends to connect something with someone else, to establish a relationship between things. Every thought moves, grows and develops, fulfills a function, solves a problem. This flow of thought occurs as an inner movement through a series of planes. An analysis of the interaction of thought and word must begin with an investigation of the different phases and planes a thought tranverses before it is embodied in words (p. 125).

In Vygotsky's experiment the role of language is the social means of moving from perceptual thinking to conceptual thinking. In the process, the child is actively forming higher level thinking ability, i.e. logically formed generalizations. It is language that is the mediator in cognitive growth. Vygotsky states:

> Our investigation has shown that a concept is formed, not through the interplay of associations, but through an intellectual operation in which all the elementary mental functions participate in a specific combination. This operation is guided by the use of words as the means of actively centering attention, of abstracting certain traits, synthesizing them, and symbolizing them by a sign (p. 81).

Thus, it seems necessary, if not essential, that students are continuously engaged in dialogue, clarifying, expanding and questioning their world, but even more so,

reaching for the higher processes of thinking while doing so.

As the student is shifting between syncratic and conceptual thinking, her speech will indicate what thought processes are being manipulated in order to "make sense". Also, speech is freeing the child from her immediate constraints of her environment and enables the movement to future activity in which she can "plan, order, and control her own behavior as well as that of others" (Vygotsky, p. 126). Speech is the external means to work on one's thoughts and to bring order out of the chaotic nature of thought. Until provided with the opportunity to work on one's thoughts, in the context of the social means to do so, i.e. language, it seems that the development of higher psychological processes may be limited or non-existent. The speech of the child will provide a means of indicating what processes are being used in order to reach true conceptual understanding. In this web of understanding, students will be shifting between concepts, complexes and even syncratic thinking, until the child can no longer form relationships between the meanings. Even in genuine concept formation, as Vygotsky states:

> . . . it is equally important to write and separate. Synthesis must be combined with analyses. Complex thinking cannot do both. Its very essence is over-abundance, overproduction of connections and weaknesses in abstractions.

Besides the processes of conceptual development, Vygotsky's idea of the zone of proximal development includes the process of using language to learn. If students are left

on their own to discuss a variety of concepts, their language may indicate the actual processes they are using in their learning, but also the language should indicate when their thoughts can no longer solve the problem. This gap in which the speech indicates the student can no longer make direct use of language to understand about what it is she is thinking is what Vygotsky (1978) terms the zone of proximal development. He defines this term as follows:

> the distance between the [child's] actual development as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers (p. 131).

It is this zone of proximal development in which education should be working. The use of language moves the students into this zone, from their actual development to their potential of the higher thought processes. In using their language to learn, the students may need to shift between personal, expressive language to higher level cognitive processes and back and forth between these processes even within the talking for learning. Given the opportunity to use their language for learning in the classroom context, is summarized by Leontieu and Luria (in Vygotsky):

> In the process of school education, the child starts off from what have become his own complex generalizations and significances; but he does not so much proceed from them, as proceed onto a new path together with them, onto the path of intellectual analysis, comparison, unification, and establishment of logical relations (p. 130).

When the student uses language to learn about a concept in school, how is this different from the learning of

everyday concepts? Vygotsky (1962) states that the process of development of an everyday concept is called a spontaneous concept. When the child enters school she is faced with the learning of scientific concepts.

The structure of a spontaneous concept differs from that of a scientific concept. The everyday spontaneous concepts are a system of concrete and familiar concepts; mechanical memory, and involuntary attention; with the content derived from personal experience. On the other hand, scientific concepts are a system of abstractions, voluntary attention, logical memory guided by meaning, reflective awareness and intellectual control with the content derived from scientific discipline.

Spontaneous and scientific concepts develop in reverse directions. The following diagram represents the features of each type of concept and the spiraling movement of scientific concepts as top-down and spontaneous concepts as bottom-up.

Diagram 1

Spontaneous and Scientific Concepts

abstract generalizations

logical memory guided by meaning — voluntary attention

reflective awareness — intellectual control

SCIENTIFIC THOUGHT

NEW SYSTEM OF THOUGHT

SPONTANEOUS THOUGHT

personal experience — involuntary attention

concrete specifics

mechanical memory

As the student is using her language to learn in the classroom content, her understanding of spontaneous concepts is merging with her understanding of scientific concepts to form a new system of thought. In other words, as Vygotsky (1962) states:

> Though scientific and spontaneous concepts develop in reverse directions, the two processes are closely connected. The development of a spontaneous concept must have reached a certain level for the child to be able to absorb a related scientific concept. For example, historical concepts can begin to develop only when the child's everyday concept of the past is sufficiently differentiated - when his own life and the life of those around him can be fitted into the elementary generalization 'in the past and now'; his geographic and sociological concepts must grow out of the simple schema 'here and elsewhere.' In working its slow way upward, an everyday concept clears a path for scientific concept and its downward development. It creates a series of structures necessary for the evolution of a concept's more primitive, elementary aspects, which give it body and vitality. Scientific concepts in turn supply structures for the upward development of the child's spontaneous concepts toward consciousness and deliberate use. Scientific concepts grow down through spontaneous concepts; spontaneous concepts grow upward through scientific concepts (p. 108).

The movement of spontaneous and scientific concepts in the classroom context occurs as a student is using her language to learn. The knowledge that the student brings to the task and the scientific knowledge that the school expects the student to learn, need to be externalized through talking, in order for the student to order the two systems of thought into a meaningful system of thought for herself. This development of higher level thinking, according to Vygotsky (1962), proceeds as follows:

> . . . the investigation of real concepts complemented the experimental study by making it clear that every

> new stage in the development of generalization is built on generalizations of the preceding level; the products of the intellectual activity of the earlier phases are not lost. The inner bond between the consecutive phases could not be uncovered in our experiments because the subject had to discard, after each wrong solution, the generalizations he had formed, and start all over again. Also, the nature of the experimental objects did not permit their conceptualization in hierarchical terms (p. 114).

Therefore, as the student is using her language to learn, the "higher concepts transform the meaning of the lower" and learning is said to occur. To conclude, what happens when students use their language to learn is best stated by Vygotsky (1962): "Thought undergoes many changes as it turns into speech. It does not merely find expression in speech; it finds its reality and form" (p. 126).

Summary of Chapter 2

From the findings of research into classroom language, it seems that the students are provided with limited opportunities to use their language for learning in the context of the classroom. This limiting of student language in the educational environment may have personal, social and political implications for each individual learner as well as for the structure of the educational system itself. From the writings of theoreticians and the findings of researchers, it is necessary that students use their language for learning in the classroom environment. The externalization of reality through language allows the student to act on the realities of the world. This externalization leads to the interpersonal and intrapersonal construction and reconstruction of reality

and is the very means by which reflection and elaboration of experience take place.

Chapter 3

METHODOLOGY

Prior to the actual study, the researcher interviewed thirteen teachers by phone, and of that number, visited five classrooms. The criteria desired was a classroom where students worked in groups of four to six peers to discuss teacher-structured lessons in a variety of curriculum subjects. Three university professors, two language arts specialists for the Edmonton Public School Board and two elementary school principals provided initial lists of classroom teachers to contact. Upon contact, the definition or concept of group work differed for each teacher. A general description extracted from the interviews of teacher-concept of group work, is as follows:

1) Two students turn their desks to face each other to help each other with a workbook page. This type of group work is done mostly for math and science.
2) Four students, whose desks face each other, make up a group. This is based purely on a physical arrangement of desks and not on any language interactions among the group.
3) Four to six student desks face each other. Each student in the group chooses a worksheet from an envelope situation at various tables and tackboards in the room. When each student returns to her desk,

she works on her chosen worksheet. Each student can be working on a different worksheet and the language interactions are limited, by the teacher, to requests for borrowing equipment (pencil, crayon, ruler, eraser).

4) The students are seated around a table in groups of six to eight students. The group can be all working on similar or different assignments such as writing a book, stenciled math sheets, drawing or other activities. The teacher rotates from table to table, listens, records observations on a file card, or formally or informally interacts with the group. No group concensus or problem-solving is required.

5) Several teachers claim the only group work they do is called 'The Magic Circle'. This is a formal session where the students are gathered, usually on the floor, in a large circle. The teacher decides on the topic of discussion taken from the Magic Circle Guidebook (1969); each child speaks in turn with no interruptions allowed, and the teacher decides on the summary and rebuttals. The topics are concerned with values clarification.

Approximately 80 percent of the teachers interviewed stated they did a limited, if any, amount of group work where students are left without a teacher to talk about an assignment. The reasons for not doing this type of group work are summarized as follows:

1) Some students are too lazy or "not bright enough" to work in student groups.
2) The teachers felt they would not know if the students are learning anything.
3) There is not enough time because the class has to cover definite curriculum objectives set by the local school board.
4) There is too much noise.

Because of the difficulty of finding a suitable classroom that met the criteria of a student-dominated discussion group, it was decided to find a classroom where the researcher could 'arrange' a setting that fit the definition of group work previously determined. A Grade 5 classroom was chosen and the teacher consented to allow the researcher to tape-record the students discussing a variety of curriculum topics.

A Profile of the Research Setting

The school is located in a mixed socio-economic neighborhood. Since the city of Edmonton has pre-planned zoning to encourage mixed neighborhoods, the school-district ranges from government subsidized apartments, rented and personally-owned condominiums, to executive-style single family dwellings. According to the classroom teacher, the greater percentage of students come from the rented apartments and townhouses, with a single parent who works. The ethnic population consists of predominantly white Canadian, with representation also from Guyana, Taiwan, Jamaica, Japan, East India and native Indian. At the time

of this study, the school population was 435 students, with 17 classrooms from Kindergarten to Grade 6. The average class loading is 25 students.

The teacher of the classroom in this study has a Bachelor of Education Degree, with a major in math and a minor in social studies. Five of her six years of teaching have been at the Grade 5 level. The students of the classroom have been involved in approximately fifty lessons (one per week) of the type done for this study. Some students mentioned they have done a "little bit" of group work in Grade 4, but "not like this kind". It seems from interviews, most of the group work that the students have participated in are in the nature of one student helping another do a workbook assignment, not that of a group discussion nature.

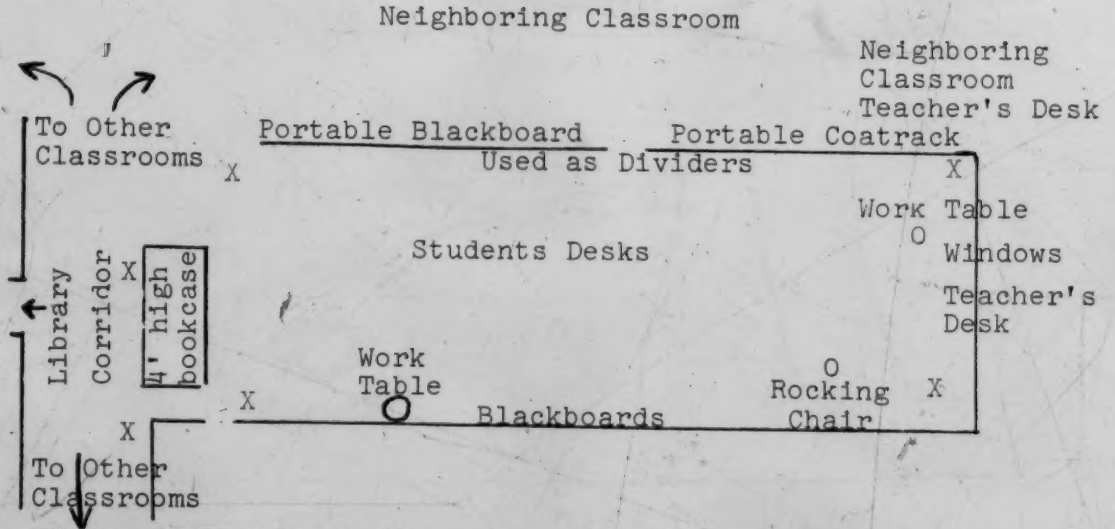


Figure 2: The Physical Layout of the Classroom*

*The locations of most of the small group sessions are marked with an X. The groups sat on the floor around a tape-recorder. The two science lessons were held in a science room, which contained groups of tables in each of the four corners of the room. In the science room the small groups sat around a table where a tape-recorder was placed.

Schedule and Format of Sessions

A visitation schedule was arranged between the classroom teacher and the researcher. The topics of discussion were done in collaboration with the classroom teacher. The topics and questions for the student discussions were to continue from curriculum topics in which the class was presently engaged. The schedule and the format of visitations is presented in Table 5.

The group members for each current events session, the poetry session and the mathematics session remain the same for each session. The fourteen members for the four social studies groups are the students that remain after the 'TOP' fifteen students go to a class for social studies lessons in French. The members for the science sessions were the students not participating in a physical education class held in the same time slot as the science discussions.

Profile of Group Members

The teacher was asked to randomly select the group members mixing academic abilities, sex, and oral language abilities. No leaders were chosen for each group; this remained a natural choice among the group members themselves.

The I.Q. categories are as follows:

1) AA - above 120
2) A - 100-120
3) BA - below 100

Table 5

Schedule and Format of Small-Group Discussion Sessions

Subject	Date/ Day	Visit No.	No. of Groups Recorded	Length of Session	Topic	Nature of Discussion Topic
Current Events #1	Mon-PM	1	6	1 hour	Injustice #1	Appendix A
#2	Wed-PM	2	6	1 hour	Play	Appendix B
#3	Mon-PM	3	6	1 hour	Bus Strike	Appendix C
#4	Wed-PM	4	6	1 hour	Nurses' Strike	Appendix D
#5	Mon-PM	5	6	1 hour	Injustice #2	Appendix E
Social Studies #1	Mon-AM	6	4	1 hour	Fur Trade	Appendix F, G
#2	Tues-AM	7	4	1 hour	Fur Trade	Appendix H
Science #1	Wed-PM	8	4	1 hour	Twigs and Buds	Appendix I
Poetry #1	Thurs-AM	9	4	1 hour	Three Poems	Appendix J
Mathematics #1	Fri-AM	10	4	45 min.	Problem-solving	Appendix K, L
Science #2	Wed-PM	11	4	1 hour	Twigs and Buds	Appendix M,

Table 6

Group Members for Current Events, Poetry, Mathematics

Group Members for: (the names of all students have been changed)

A. Current Events - 5 sessions — All groups taped for current events
B. Poetry - 1 session — Only 1, 2, 3, 4, 6 taped for poetry
C. Mathematics - 1 session — Only groups 4, 5, 6, 7 taped for mathematics

Group No.	Name	Age	I.Q.	Sex	Academic Rank in Class of 28	Language Arts Ability	Math Ability	Oral Discussion Ability
1	Tara	11	A	F	22	BA	A	A
1	Pat	11	A	F	14	A	A	BA
1	Ellie	11	A	F	15	A	A	AA
1	Craig	11	A	M	23	BA	A	A
2	Connie	11	AA	F	3	AA	AA	A
2	Paul	11	AA	M	11	AA	A	AA
2	Donna	11	BA	F	27	BA	BA	A
2	Andy	11	A	M	24	A	A	AA
3	Abbie	11	A	F	20	A	BA	A
3	Flin	11	AA	M	1	AA	AA	AA
3	Sharon	11	A	F	16	A	A	A
3	Marty	11	A	M	19	A	A	A
4	Sunny	11	AA	F	2	AA	AA	AA
4	Shel	11	A	M	10	AA	A	A
4	Claude	11	A	M	12	AA	A	AA
4	Alta	11	A	F	18	A	A	A

(Table 6 - continued...)

Group No.	Name	Age	I.Q.	Sex	Academic Rank in Class of 28	Language Arts Ability	Math Ability	Oral Discussion Ability
5	Pam	11	A	F	6	A	A	A
5	Gord	11	A	M	9	A	AA	A
5	Maggie	11	A	F	17	A	A	A
5	Kate	12	BA	F	26	BA	BA	BA
6	Sally	11	AA	F	8	AA	A	AA
6	Joan	11	BA	F	28	BA	BA	A
6	Liz	11	A	F	5	A	A	A
6	Luke	12	BA	M	25	BA	BA	A
7	Jack	10	A	M	21	A	A	A
7	Loni	11	A	F	7	A	A	A
7	Harry	11	AA	M	4	AA	AA	AA
7	Gail	11	A	F	13	A	A	A

Table 7

Group Members for Social Studies - 2 Sessions

Group No.	Name	Age	I.Q.	Sex	Academic Rank in Class of 28	Social Studies Ability	Oral Discussion Ability
1	Jack	10	A	M	21	A	A
1	Paul	11	AA	M	11	AA	AA
1	Tara	11	A	F	22	A	A
2	Maggie	11	A	F	17	N/A	A
2	Craig	11	A	M	23	BA	A
2	Loni	11	A	F	7	AA	A
2	Alta	11	A	F	18	A	A
3	Claude	11	A	M	12	A	AA
3	Joan	11	BA	F	28	A	A
3	JoAnne	new student	N/A	F	N/A	N/A	N/A

Table 8

Group Members for Science - 2 Sessions

Group No.	Name	Age	I.Q.	Sex	Academic Rank in Class of 28	Science Ability	Oral Discussion Ability
1	Claude	11	A	M	12	AA	AA
1	Pam	11	A	F	6	A	A
1	Kate	12	BA	F	26	A	BA
1	Marty	11	A	M	19	A	A
2	Sally	11	AA	F	8	A	AA
2	Donna	11	BA	F	27	AA	A
2	Craig	11	A	M	23	A	A
2	Sharon	11	A	F	16	A	A
3	Connie	11	AA	F	3	A	A
3	Gail	11	A	F	13	A	A
3	Tara	11	A	F	22	A	A
3	Joan	11	BA	F	28	BA	A
4	Sunny	11	AA	F	2	AA	AA
4	Alta	11	A	F	18	A	A
4	Liz	11	A	F	5	A	A
4	Jack	10	A	M	21	A	A

Key to Profile Tables:

AA - above average

A - average

BA - below average

F - female

M - male

Procedures

Step One:

1. All the groups met together in a large gathering in front of the researcher. Each session had specific beginnings as follows:

a. Current Events - the researcher read the paragraphs from the storybooks or the newspaper clippings as the students followed along on their own zerox copies (see Appendices A to E).

b. Social Studies - the researcher read the textbook notes and discussion questions. Each student followed along on their own zerox copy (see Appendices F to H).

c. Science - the researcher placed a variety of twigs at each group's table. The students were to use these twigs to discuss the tasks on the sheet Budding Twigs (see Appendix I for session one).

The researcher explained how to play the Twig Game. The students had to pick a twig, describe it, place it in a box. Another group would listen to the tape

and try to figure out which twig went into which Box (see Appendix M for Twig Game Description).

d. Poetry - the researcher played the records of Me and I and El Condor Pasa as the students followed along on their Xerox copies. The researcher read the poem No Difference as the students followed along on their xerox copy (see Appendix J).

e. Mathematics - the researcher read the problems and the students followed along on their own zerox copies. During the discussion session the students were given paper on which they could do any marking to help them solve the problem (see Appendix K for problems and Appendix L for samples of student worksheets).

After the students were read any printed directions, the small groups each moved to a different location of the room or hallway. The groups were told they could talk about anything in any way that would help them understand the assigned tasks. They could talk about things they already knew about, ask questions or argue about what someone else says. The researcher was sometimes called by the group for help in the group discussions. Except for two groups in mathematics, the researcher maintained minimal interventions of nil to two times per group sessions.

The groups were responsible for allowing the tape-recorders to run from the moment they arrived at the group

intent to answer the research questions being considered in this study.

The nature of the task will be discussed with the intent to describe how the students interpret the statements, question and information of the resources for discussion. The foci of these descriptions will be to consider research question five:

5. How does the nature of the task affect the nature of the language used for learning?

The content of the discussions, the language unique to the students and the strategies the students employ within the process of making meaning will be considered in a description of verbatim samples of the students' oral language. These protocol examples will be discussed with the intent of answering the following questions asked in this study:

1) What language strategies do the students employ that indicate they are making meaning for themselves? For others?
2) What is the content of student language that indicates they are learning?
3) How do students use their language to make sense of the technical language of school subjects?
4) What happens when students can no longer make sense of what they are attempting to understand?

While providing descriptions of the language the students are using for learning, theory and research-based

information may provide some explanations as to why the language is an indication of the nature of the learning.

The approach of this study is necessary, not only because of the exploratory nature of the study, but also because of the very nature of the research questions themselves. Finally, the small-group discussion approach provides a classroom setting that is feasible for instructional purposes and recording purposes. Technical difficulties, such as too many voices, faintness of voice quality, distance of microphone from the speakers, is sufficiently overcome using this approach. Also, the implementation of small-group discussions in classroom seems possible for daily audio-recording and analysis using the ethnographic strategies of this study.

Chapter 4

TREATMENT OF THE DATA

In order to analyze several aspects of the students' language, nature of task, content of the talk, functions of the talk and the unique language uses of each subject area will be considered. The major questions to be answered are 1) what demands does each subject area make on the students' language, 2) what language do students use to learn in different school curriculum areas?

Social Studies

The Nature of the Task

The learning in social studies requires a language that must be used to try and make sense of:

1) terminology of concepts
2) historical fact
3) geographical factors
4) economic factors
5) social factors.

Thus the knowledge expectations of the discipline social studies makes demands on the language of the students that may be far removed from the students' representations of experience. The very nature of the task (Appendices F, G, H) has an orientation that requires an understanding of sophisticated economic terminology (e.g. monopoly, supply

and demand, cost of production and others). The specific task here requires a knowledge of the relationships between these economic concepts and other factors surrounding the beginning of fur trade exploration in early Canada.

At the time of this study, the curriculum in social studies usually involved a kit-form of subject materials. The kit was called "Kanata Kit" and is designed to include Canadian materials with the intent to raise the Canadian student's consciousness at a level suitable for a particular grade level. However, the kit for the grade five students of this study had been temporarily removed, due to some difficulty in the readability level of some of the kit's resources. The classroom teacher was left to use her own materials and textbooks available from the school library and her own classroom.

In this study, the nature of the task in social studies followed from a unit on the Indian tribes of Canada. Therefore, the social studies task format in this study was chosen based on what the students were studying and would be studying in their regular classroom schedule - the fur trade.

Xerox copies were made of texbook pages (see Appendix F) and read to the studehts. The task sheet was also read to the students (Appendices G, H).

Student Explorations of the Terminology of Social Studies

It appears that a dichotomy may exist for the students in their attempts to find meaning in their exploratory talk.

On the one hand, they are attempting to define a concept and on the other hand, they are trying to learn the correct terminology of the concept.

The beginning dialogue of a group indicates a difficulty in defining concepts. Vygotsky mentions that "the analysis of reality with the help of concepts always precedes analysis of the concepts themselves" (1962, p. 79). In trying to use their language to learn what is meant by discovery and exploration, the difficulty of students using their language to define terminology is evident in the following:

Maggie: What does discovery mean? Okay, ah . . . I think discovery means . . . when . . . when you find something you discover land or . . . discover something.

Craig: No, when you find something . . . that no one has before . . . nobody knows it.

Liz: Yeah, you just discover it.

Maggie: Does anybody else have anything else. . . ? Me. . . .

Craig: What does exploration mean?

Maggie: Something to do with exploring. . . .

Craig: When you explore something . . . like you explore a tree or something.

Maggie: You go to explore something . . . something to do with.

Craig: Yeah.

Maggie: Street.

(Then they move on to next question).

In the struggle to define, the students' language does not appear sufficient to explain the meaning of discovery and exploration. What they have to do is use the word itself with limited expansion of the meaning of the concept. In other words, they have to keep using the term itself without really defining it. Craig's attempt to define discovery extends beyond the word itself when he does not use the term in the following definition of discovery:

Craig: No, when you find something that no one has before . . . nobody knows it.

Another group seemed to be limited to the same strategy to define a term.

Paul: Our first question is "What does discovery mean?" What does it mean Tara?

Tara: Don't know.

Jack: Then . . . find something . . . wanta look for something.

Paul: I think discovery means when you find something. Go Tara. You gotta go.

Tara: I think discovery means when you find something too.

Paul: Okay. So we all know what discovery means.

Tara: And we all agree what it is.

Paul: We hope.

Tara: We think.

Paul: Exploration . . . what does it mean?

Jack: Exploration (makes a noise) get to the ( ).

Paul: Explanation means when ya. . . .

Jack: Ex-plor-ation (whispers correction).

Paul: Exploration means. . . .

Jack: To explore something.

(Go on to next question)

The definition strategy that the students are required to use does not really indicate what their knowledge of the word is or their knowledge of what defining is limited to seems similar to worksheet answers or one-word answers that are acceptable only if the definition fits a pre-determined response. The students could have a more extensive understanding of the concept, or less understanding, than is indicated by their language. The restriction to understanding is not a lack of understanding of the concept, but a lack of the language to express the understanding.

Using the Student's Own Language in Evolution of Meaning

Other definitional types of questions did not provide elaboration of meaning by the students. However, students did attempt to understand subject terminology and, in using their own language, did manage to indicate some understanding. As well, an evolutionary aspect to their collaborative understanding of subject-specific terminology was evident. Using the example of "What is a monopoly?" gives an indication of how the students, left to explore the meaning of

monopoly, are able to create a web of relationships in working towards a conceptualization of monopoly.

Maggie: Tell what you think monopoly is.

Chris: Like, it's when you. . . .

Alta: Selling and buying.

Craig: Yeah, buy a piece of something like . . . like . . . so much of this. Yeah . . . money.

This initial exploration of the meaning of monopoly allows the students to begin building meaning using their own language. Alta brings in the information that it is a "selling and buying" event. Chris mentions buying a piece of something, thus not quite sure what the "buying" does buy but introduces the concept of money to the information.

Further discussion leads the group to talk about staples, colonies, the need for furs in France, the French takeover of Indian furs, the idea of trading with the Indians, and why the French came to New France. Eventually the students return to the meaning of monopoly.

Maggie: What do you think monopoly means? I think it means. . . .

Craig: Like it . . . the monopoly game . . . you buy some of this part. . . .

Alta: Buying and selling and getting money.

Maggie: Trading and. . . .

Liz: Trading . . . yeah.

Alta: Trading . . . yeah.

Liz: Then buying and selling and getting money.

Craig: (unclear).

Alta: I'd love to have money now.

Liz: Alta! (laughs).

Alta: I love it.

Again the students can only take the meaning of monopoly so far, yet have added to their original attempt that monopoly has trading involved as well as their personal experience with the game of Monopoly. Although personal experience may appear irrelevant or off topic, in this context, if the students were encouraged to explore the game of monopoly further perhaps, they could work into the meaning of "ownership by one" even more so, and transfer this idea to the fur trade monopoly. Even the personal value of loving money enters the meaning of monopoly for Alta. One might assume that in wanting a monopoly, one loves money. Her awareness of this economic aspect of monopoly is important to Alta's understanding the meaning of monopoly.

In session two, the students have again discussed, from the task sheet, several other economic factors of the fur trade. The additional constructions and reconstructions of the economic world of the fur trade have provided the students with additional meanings to their original buying and selling concept of a monopoly. Maggie has played the role of king and her make-believe fur traders are reporting to her.

Craig: Let's finish up the monopoly question.

Maggie: Monopoly?

Craig: Monopoly.

Maggie: Okay. It says . . . (she reads question in session two, Appendix H). Tell me why you want a monopoly.

Craig: Well, so we can limit how much you're allowed to have so it won't go . . . so the fur trade won't go out of business.

Maggie: But . . . there's not going to be any people following you around. (She is referring to their previous discussion on trapping licenses and limiting the catch).

Liz: Yeah . . . there's not going to be any people.

Craig: Well . . . well . . . if we have a monopoly . . . right? We get all the furs if we have a monopoly and we can sell 'em and we have people working at stores . . . say they're only allowed to sell two or three furs to a person . . . they take all the furs to the market.

Maggie: The more . . . listen, the more you sell, the more money you make and plus you can go to . . . go and hunt and get some, right? So we . . . so let them buy as much as they want . . . because the more they buy, the more money you make.

Craig: Yes, but what if the animals become extinct?

Maggie: What?

Craig: What if they go out of business . . . . become bankrupt or something?

Maggie: We'd go hunting again. . . .

Craig: Yeah, but we have to go away far away. . . . From the discussions on monopoly, the students have each contributed to the meaning of monopoly. In externalizing the individual perspectives of monopoly, each member is able to work into the meaning of monopoly and is beginning to make connections between monopoly, the transactions of business and the fur trade. Table 9 gives an overview of the evolution of the meanings for monopoly. The evolution has occurred within the discussion of the word itself and within the context of other economic factors of the fur trade.

From a very limited definition of buying and selling, the word evolves into a complex of relationships. In monopoly three, the students are beginning to supply reasons for a monopoly: to provide a hypothetical situation, "What if they go out of business", Craig is extending the meanings of monopoly to include, not only reasons for a monopoly, but alternatives to the business reality of bankruptcy. Maggie's solution to Craig's problem of going out of business is to "go hunting again". As Craig mentions that they (the fur traders) will "have to go far away", he appears to be moving into further reasons for a monopoly, along with being on the verge of discovering why fur trade routes began to extend beyond just New France (to extend the supply of furs).

Table 9

Discussion Evolution for Meaning for Monopoly

Monopoly One	Monopoly Two	Monopoly Three
selling and buying	Monopoly game	so we can limit
	buy some part	so the fur trade won't go out of business
money	buying and selling	
	getting money	but there's no people around
	loving money	if a monopoly we get all the furs
		the more you sell, the more you make
		what if they go out of business, go bankrupt
		go hunting again
		have to go far away

This is not to suggest the students in using their language are explicitly aware of their learning. However, in each discussion segment, the students do appear to be making sense of the term monopoly with more clarity and complexity. They themselves are active in making bonds between the information about which they are talking.

Content of Student Discussions in Social Studies

The subject matter of social studies tends to present specific content that the students should learn. The task-

sheet (Appendix G) questions number three and four are intended to initiate, from a given structure, an opportunity for the students to explore the content of the fur trade. The purpose of incorporating the clause, why you think, and make some guesses, seems to encourage the students to not feel constrained by subject content mastery, yet feel free to use their language to construct their own content meanings.

The content of the students' language seems to indicate a vague knowledge about some of the content of the subject - The Fur Trade in New France. To try to understand the knowledge regarding the fur trade in New France, the content of the students' talk is presented with an indication as to strategies they employed as they were discussing the content of social studies.

Student Language	Learning Strategies
Liz: Okay, I think the French um . . . started exploring Canada because they had things they didn't have in France . . . maybe . . . I don't know.	1) reason was to come to Canada to have things they did not have in France. Liz is not sure of what the things are yet, so remains tentative and unsure.
Maggie: Okay, ah . . . I agree with that . . . or they . . .	2) exploration because not enough room in France.

Student Language	Learning Strategies
the French were in Canada 'cause they didn't have enough room in France.	
Craig: Well, the French like fish and they had a lot of fish in Canada.	3) to use the information of a lot of fish in Canada, and connect it with why the French came, Craig generalizes an opinion of his that the French like fish. Here he combines fact (a lot of fish) with opinion (like fish) to attempt a logical reason for exploration.
Maggie: They had a lot of beaver pelts . . . they had beaver pelts.	4) a slight indication here of shared meaning building in the discussion. From Craig's a lot of fish, Maggie has added a lot of pelts.
Craig: And they had beaver ( ) . . . and everything else. . . .	5) Craig and Maggie are reviewing what has been learned so far.

Student Language	Learning Strategies
Maggie: And . . . and there was . . . there was no space then and France was crowded.	
Craig: There were a lot of riches.	6) from the content so far, Craig synthesizes the information of why there appears to be a major reason for exploring Canada.

From this short excerpt of discussion, the students have used their language to inform, to reason, to generalize, to give an opinion, to add information, to review the content of their talking and to synthesize the content. Each person's content adds to the understanding of the content of social studies. Although the language of learning appears disorganized at first, by using various strategies, the students are constructing order out of the apparent chaos of the content. The move to order is evident when Craig is able to synthesize the bits of information into a working piece of meaningful content, "there were a lot of riches". As the students talked, they gave a more precise shape to their thoughts about the fur trade.

Since one group can generate a variety in content, what one may predict is, that several small groups can generate such a diverse content that no meaning will be created. All

that may occur is that each group, although constructing meanings within their group, is producing sets of isolated bits of information with no relationships between the different group meanings. However, there appears to be some indication that between groups there are common elements of content as well as different elements in the group discussions.

The following discussion from a different group shows how there are similarities and differences, both in content and strategy as the students are free to use their own language to learn.

Student Language	Learning Strategies	Similarities
Paul: It's cause . . . they wanted more money from the fur trade.	1) previously Maggie mentioned beaver pelts.	1) similarity is Maggie's statement of beaver pelts and Paul's statement about the fur trade.
Jack: Uh, uh.	2) this group is building meaning by arguing their points.	
Paul: Yes it is.		
Tara: I think it because they wanted to find out if anyone was	3) in the other group Maggie said not enough room in France, although Tara's reason	

Student Language	Learning Strategies	Similarities
living on the island so they could move . . . some of their people over there, 'cause it is crowded over in France.	includes moving to an island.	2) Maggie's group and this group mention overcrowdedness as a reason for leaving France.
Jack: I think it's . . . they were trying to get the . . . to India and they sorta' got screwed up on the way . . . and they went there . . . but when they got to Canada they. . . .	4) Jack's content seems to be introducing the idea of Columbus' discovery of America which for the French fur trade is not so. Yet he brings it back on topic by saying "when they got to Canada" and Tara completes the thought by mentioning as follows: "exploring".	

Student Language	Learning Strategies	Similarities
Tara: They started exploring Canada. . . .		
Paul: Okay. No one believes me that I'm right but they're stupid.	5) Paul wants to continue arguing his point and justifies it by calling others stupid.	
Jack: Noooo . . . just be quiet. I never did my answer.	6) Jack still wants to make his point also.	
Paul: Didn't you?		
Jack: No, I screwed up. I think they did . . . went to Canada because . . . it was really crowded and wherever they came from and they wanted. . .	7) Jack has now reached consensus within his group and has discussed similar content to Maggie's group.	3) Jack's content of overcrowdedness is similar to Maggie's group who stated overcrowdedness as a reason for leaving France

Student Language	Learning Strategies	Similarities
Tara: To find out. . .		
Jack: If anybody was there and all that junk.		
Paul: So they could find people there . . . so we agree.	8) Paul attempts to get a group consensus about the content the group has introduced to the discussion.	4) Alta mentioned in Maggie's group that people were already in New France.
Jack: And so they could give advantages . . . and it wasn't so . . . grand . . . founded.	9) It is not clear what Jack means by advantages. It could be similar to Craig's riches but that needs elaboration from Jack.	5) Craig, in Maggie's group, mentioned the French could get riches. So this is similar to Jack's advantages.

Paul's group does not synthesize their content about why the French started exploring Canada. However, they do discuss content similar to Maggie's group. A major difference in Paul's group was a need to clarify and change one's points, as demonstrated by Jack. Yet Paul wanted his point to be accepted and rushed the group to consensus.

Maggie's group returned to the concept of overcrowdedness. This reason, which was introduced earlier in the students' discussion, served as a starting point to build a web of meaning about events, people, problems or other factors. The relationships between these factors and the need for exploration and the fur trade developed as the students introduced new content and employed new strategies to make sense of that content. As Vygotsky (1962) suggests: "a new way of seeing things opens up new possibilities for handling them." Thus, as the students introduced new content to the discussion or offered the same content in different ways, the strategies they used to handle the new possibilities changed as the content changed. This process of the overlapping changes between content and strategies can happen within an individual's use of language to learn. Additionally, the content and strategies can change between group members. This process of change <u>within</u> or <u>between</u>, as the student/s use their language to make sense, can be viewed as an indicator that learning is occurring.

In the following discussion, between Maggie, Craig, Alta and Liz, as the content grew and changed, it seems their need to increase or change their strategies for understanding the content also increased or changed. As the passages of oral language are progressing, it is noted that each individual member seemed to play specific roles or had specific strategies unique to their use of language to learn. Maggie tended to initiate and control the discussion, Craig tended

to present slight hints of disagreement, while Alta and Liz tended to be tentative, questioning and the wonderers of the group.

Maggie:	Okay, no, no, no, okay it says make some guesses about events people.. Okay, let's make it . . . some decisions about . . . you know . . . they. . . .	1) as she reads the question Maggie is the <u>initiator</u> for the content to follow. she also is attempting to <u>control</u> the content by asking for some decisions.
Craig:	Events. . . .	
Liz:	Events. . . .	
Maggie:	That. . . .	
Liz:	That occur.	
Maggie:	Kathy.	
Craig:	Okay, let's say we're taking the train.	2) the "let's pretend" statement of the question puts Craig's strategy into the <u>hypothetical</u> process for learning.
Maggie:	Can we?	3) Maggie picks up Craig's point as incorrect and <u>questions</u> it.
Craig:	Try . . . take a boat.	4) Craig makes a change in the content.
Liz:	I wonder where he took a trip to? I	5) the '<u>wondering</u>' strategy allows for Liz to hunt for

forget.	some specific content.
Maggie: New France . . . Canada.	6) clarifies Liz's question with information.
(interruption from researcher - "You decide: is answer to Maggie's request earlier of "Kathy")	
Maggie: Ohhhh.	
Liz: Ohhhh ( ) to be really funny.	
(interruption)	
Craig: We're the French.	7) forgets original pretending strategy of boat but pretends now they are French.
Maggie: When the French came.	
Craig: When the French came.	
Maggie: Indians . . . they were. . . .	8) introducing new content to this part of the discussion.
Liz: Different.	9) completes Maggie's thoughts.
Maggie: Different.	
Alta: Felt different.	10) a very subtle change of a difference between felt different and were different.

Craig:	Yeah . . . they thought. . . .	
Maggie:	You think, you think the Indians won the war against the French?	11) changes the logical flow of argument but is still maintaining content of Indians and French. Maggie's question strategy now makes new demands on the content.
Craig:	I don't know because the French. . . .	12) both Craig and Liz are tentative in replying to Maggie's question but Craig starts to give a reason.
Liz:	I don't think so.	
Craig:	Took over their furs and . . . everything else like that.	13) it appears that Craig is beginning some relevant connections: 1) the French came to New France by boat 2) when they came they took the Indians' furs.
Liz:	Yes.	
Maggie:	But then. . . .	
Liz:	Their wildlife.	14) Liz continues Craig's connection of ideas to include all wildlife.
Maggie:	We gave . . . the French gave the . . .	15) Maggie seems to be providing justification

	the French gave the Indians a lot of stuff and they took. . . .	for the French taking over the Indians' furs and introduces the basis of concept of trading.
Liz:	Yeah, they probably traded with each other.	16) Liz continues Maggie's move and agrees with trading but remains tentative by stating "probably". The strategies of Maggie and Liz builds the content of what was traded into the discussion.
Maggie:	Metals and. . . .	
Liz:	Yeah, horses and metal and. . . .	
Craig:	Yeah, but they just wanted to . . . did their own fish from caviar.	17) Craig returns to his earlier reason for why the French came to New France (for fish). However, he introduces new content in the idea of caviar, which appears to be moving off topic yet is related to Craig's content about fish.
Liz:	. . . houses.	
Maggie:	Yeah, but . . . we wanted, they wanted fish.	
Craig:	And garbage like that.	

Alta: How do you know if they discovered caviar ( ) now?

Maggie: They didn't . . . they . . . I don't think they knew caviar yet.

Liz: ( ).

Alta: I know.

Craig: No caviar.

Alta: (whispers) 'cause they haven't ( ) got cold storage yet.

Maggie: If they liked it . . . a lot of people like caviar and it would have been all gone . . . and then there would be no fish left.

Others: Yeah.

Liz: Right . . . caviar's expensive too.

18) the group appears now to take the topic of caviar and explore it in a variety of ways.

19) although maintaining the content about caviar, Maggie and Alta have kept the perspective of time relevant to the topic of fur trade.

Maggie: 'cause all the fish. . . .

Craig: Well, we'll have to get back to the questions.

20) however, Craig recognizes the content of the discussion may be leading to a dead-end and not really following or adding to the line of inquiry about Maggie's initiation of the guesses about people and events.

Maggie: Well, they probably didn't know. . . . Okay, let's see, some problems that occurred.

Starting with Maggie's initiating the topic of people and events, the group members only momentarily brought in the fur trade. The members presented different content and shifted their strategies, accordingly, to try and make sense of the content they were presenting. The discussion followed a line of inquiry but the students were not able to connect the content of their discussion with the second part of the statement. They were able to introduce content relevant to:

1. Make some guesses about events, people, problems or other factors that might have occurred

but only began to make slight relationships with part two of

the statement:

2. because of the need for furs

when Craig mentions the French took over the furs from the Indians. Once Maggie and Craig realized the topic of caviar was making little or no contribution to the sense of the task, they used their language to shift the topic and end the caviar discussion. This gave a new shape to the inquiry.

From the preceding section of a social studies discussion, it can be seen that the logical processes in the discussion were not strongly linked together to develop a concept of "events, people, problems or other factors because of the need for furs." In regard to Vygotsky's processes of higher psychological thought, the students appear to be using their language to make connections in complexes and pseudo-concepts (see Chapter 2, Table 4). The students group the content of their discussions, not on one general trait such as overcrowdedness, but on several categories of content. It appears as if the student language is used to establish a collection of ideas, i.e. each category introduces a new attribute to the content of the fur trade with weak bonds between each category.

Yet this use of student language to learn in Vygotsky's (1962) processes, is the first stage of abstraction. It is also the basis for later generalizations and relationships in true concept development. As the students progressed through the variety of content, using various strategies to make sense of the task required (in this example - question #4, session

one), they linked a collection of categories not directly related logically to the reasons for the fur trade in New France. The thinking in complexes was revealed in the student language as follows: (the arrows indicate links in similar content).

Table 10

Thinking in Complexes

Relevant to Task	Content	Category of Content
	taking a boat	travel to New France
	Indians are different	evaluation of Indians
begin building of concept for fur trade.	French at war with Indians ↓ take over of furs by French ↓ take over their wildlife ↓ gave Indians a lot of stuff ↓ the French traded metals, horses	fighting ↓ because French won ↓ furs came from wildlife ↓ but French gave for furs ↓ what they gave
	wanted fish ↓ caviar - a) did not know then b) cold storage c) too expensive	one of original reasons for coming to New France ↓ caviar comes from fish

Table 10, Thinking in Complexes indicates a linking of content, however, the categories of the content changed.

These changes in the category of content suggests that the students' language shaped their thoughts about the fur trade as a collection of ideas. The linking of the content was shaped by the language of the student. The development of ideas is similar to Vygotsky's process of thinking in complexes at the level of collection.

In the following example, when the students did introduce their own content to the discussion, one was able to note a greater development of cognitive and social strategies related to the processes of higher level thinking. As the next section of discussion develops, there appears to be indications that the students are able to use their own knowledge and language to order experiences they are more familiar with than the economic and political factors of the fur trade of three hundred years ago.

Maggie: Let's pretend . . .
imagine you were
Champlain.

Lig: Who was the. . . ?

Maggie: He was the founder
of New France and
. . . Canada . . .
I'd be excited . . .
sorta . . . to
find. . . .

Liz: Land that nobody else
had found.

1) this is one of the few sections in all the social studies transcriptions where personal-expressive language was used.

Maggie:	Yeah.	
Alta:	The Indians found it.	2) a logical piece of information is introduced by Alta.
Liz:	When you be on New France . . . nobody in France - I mean, had found it.	3) Liz supports her point by clarifying what she meant by "nobody else".
Maggie:	Yeah . . . like the only French person.	
Chris:	Well if I were Champlain I would take all the crowded French people and bring them over here.	4) relationship here between the reason for leaving France and Champlain's purpose, although no mention of fur trade.
Maggie:	I wouldn't take. . . .	
Alta:	It might not be crowded, I'd keep half there, keep half here.	5) from Craig's point to bring all the people, Alta suggests tentativeness and a solution.
Maggie:	Yeah, because if everybody came . . . then France would be no good.	6) a bond of thinking here with Alta's tentativeness. Evaluation (no good") qualifies reason for not bringing everybody to New France.

Craig: They be able keep some . . . some there.

7) changes point to agree with Alta about half and half.

Alta: But then New France would be crowded.

8) attempts a link with "but" to contradict Craig but not clear on division of people.

Maggie: Yeah . . . because then you have . . . that's why.

Alta: You'd have France and New France.

9) if you have half here and half there, you create two places. Alta makes sense of why a France and a New France. To her, a logical reason.

Craig: Oh, oh . . . then we'd . . . then we'll give them a bit more land and then that . . . then that's it, if. . . .

Alta: It . . . it is part of the Indians too.

10) Alta keeps the perspective of people coming to New France that they are moving in on the land inhabited by the Indians which could be

linked to her idea of half and half.

Maggie: Because if . . . even if you put . . . like say a hundred people in . . . in Canada . . . it's still gonna' get crowded . . . .

11) Maggie continues her line of inquiry from:
a) France be "no good", next to
b) Alta's about New France being crowded and
c) introduces a hypothetical amount of people to support her inquiry.

Liz: Yeah.

Maggie: Very, because . . . a. . . .

Liz: And it's half the Indians too.

Maggie: Children grow. . . .

12) continues from hypothetical amount as reason for increase in population.

Craig: You can fit one hundred people in Nova Scotia . . . for heaven's sake . . . it wouldn't be crowded. . . .

13) Craig is from Nova Scotia and brings in personal experience to contradict Maggie's argument and perhaps justify his point of view.

Maggie: So what?

Liz: True.

Maggie: I'm just saying like

14) the discussion is beginning

even . . . if you bring over a hundred people you're going to end up with a thousand people.

Craig: Yeah, because they'll. . . .

Alta: Girls can have babies, you know.

15) a statement of new content to continue students' logic of why 100 people become 1000 people.

Craig: Probably mate. . . .

16) a tentative restatement of Alta's factual content.

Maggie: So . . . but . . . if you go with a hundred you'll probably end up with about two hundred.

17) tentativeness continues as numbers of original population the group hypothetically introduced to the content increases because of population growth.

Liz: Two hundred.

Maggie: Yeah . . . (slight laugh) three hundred.

Maggie: Okay . . . a. . . .

Alta: So bring out half.

18) recapitulates original point about half and half

connect overcrowdedness in France as reasons for leaving France with how New France could possibly have the same problem.

population in France and New France.

Craig: So you're right.

(short discussion on monopoly)

19) Craig concedes to the point Alta and others have made.

Maggie: Why do ya'. . . I know that the French . . . started s'ploring Canada . . . 'cause they didn't have enough.

Liz: ( ).

Maggie: Enough . . . enough for ( ) space and . . . in France.

20) overcrowding is still a major reason for French coming to New France but the students have not made connections with the fur trade as a reason. The fur trade concepts seem removed from the group being able to make sense of the fur trade as a reason for coming to New France.

Craig: . . . in France.

Maggie: And it got too . . . overcrowded . . . so they came over

here.

Liz: Right.

Alta: Right . . . and they had to keep half over here . . . because it'd reduced the amount of people.

Maggie: Nooooo.

lta: Yes it would when you would bring them over . . . and if they bring the whole thing they just. . . .

Craig: What are you talking about?

Maggie: No, no, they'd just lose their. . . .

Craig: ( ).

Maggie: Noooo, what are we saying? They . . . they don't have enough people there . . . I mean they had too much room . . . too many . . . too many people there . . .

21) Maggie's strategy is to begin summarizing the discussion to this point after the analysis of the reasons for coming to New France are beginning to wane.

they . . . there's all and . . . and . . . just have too many people so . . . some people came over on the boat but the boat was expensive.

22) instead of summarizing and ending the previous line of inquiry, Maggie's introduction of new content following from her summary leads to a whole new area of content.

Craig: No, it isn't.

Maggie: The boat ride . . . was too! You know how much you have to pay?

23) as the discussion continues, the students still try to make sense of the times of three hundred years ago. The strategy of comparing the value of money then to now keeps the content on topic but on the students' own terms.

Liz: How much?

Craig: One hundred dollars.

Maggie: (laughs). Something like that.

Liz: Yeah.

Maggie: You have to pay a lot of money for that but . . . but back then do you know how much a hundred dollars was?

Craig: You had to sleep on . . . a thousand dollars.

Maggie: Some people couldn't even afford a hundred dollars . . . do you know how much a hundred dollars was then?

24) strengthens Maggie's argument about the pre-rated value of money "then" and "now".

Craig: About a million.

25) the inferential meaning here is difficult to decide whether Craig is being sarcastic, humorous, exagerating for effect or all of these things. Usually the context or intonation should give some clue but in this instance, really does not.

Alta: That . . . that about two cents be about . . . two dollars.

Maggie: Yeah . . . and two cents was hard to afford you know . . . then.

26) Maggie agrees with Alta and changes content of one hundred dollars to two cents that was even too

much then. The connection is with the recency of Alta's statement about "two cents be about two dollars".

Craig: (laughs). So . . . so.

Alta: My mom can ( ). 26) Alta switches the content into the personal mode and uses everyday knowledge to continue the comparative value of money.

Craig: So, twenty-five cents.

Maggie: Yeah, I know. That's half.

Craig: If you've got a dollar well that's a pretty good allowance. 27) Craig makes an evaluation of the value of an allowance which weakens the linking of the argument with the "then" and "now" so this content passage ends and shifts to a new content.

Students' discussion on the fur trade indicates that the content elaborates the concept of overcrowdedness in France instead of the isolated bits of content as indicated in the discussion in Table . The thinking of the students

as they explore with language the idea of overcrowdedness not only suggests a stronger linking between the categories presented in the content, but at the same time suggests the students are constructing a deeper understanding of the concepts of "then" by relating it to concepts of "now". These stronger relationships between content indicate the students are capable of higher level complexes and are beginning to incorporate pseudo-concept processes in their thinking. In Table 11, Thinking in Pseudo-Concepts, the arrows suggest links in categories.

The content of the discussion continued to build in meaning by the building of relationships of the same category. When the content shifted to the boat ride, the concept of money value shifted the category of overcrowdedness. This shift of attributes suggests the students did not maintain the pseudo-concept of overcrowdedness as a reason for the fur trade of New France but needed (unconsciously perhaps) to order their thoughts, using the process of chaining or even collection complexes.

Maggie's Use of Language to Organize Her Thoughts

In the analysis of the content and strategies in social studies, the discussion may appear to suggest that logical ordering of information occurs by the students only if there is present the syntactical connections with words such as because, therefore, and, so, if and other words. But this "clause analysis" format is not necessarily always the

Table 11

Thinking in Pseudo-Concepts

Relevant to Task	Content	Category
	Champlain bring all crowded French people	crowded
	bring half and half	crowded
	put 100 people in Canada still crowded	crowded
	children grow	so more crowding
✓	Nova Scotia	not even crowded
	100 people end up 1000 people	crowded
	girls have babies	population growth
	100 people end up 200 people	population growth
	not enough space in France	because overcrowded
	came to Canada	got overcrowded in France
	reduce the amount of people	solution for overcrowded France
✓	boat ride	how overcrowded population moved to Canada
	one hundred dollars for boat ride	shift now to new category
✓	could not afford one hundred dollars	
	pro-rating value of money then and now	

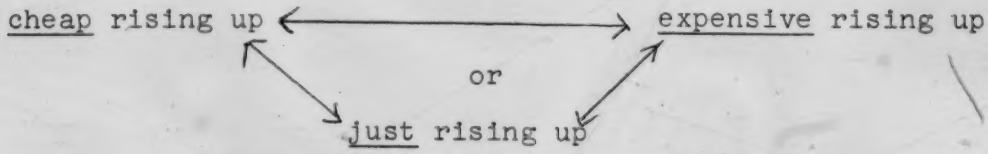
indicator that logical conceptual processes are operating in the students' use of language to organize their thoughts. In an article titled The Logic of Non-Standard English, Labov (1972) discusses how the language of non-standard English users can still order the experiences of the world without the presence of formal linguistic connectors. What language use does for an eleven-year-old student is to create frames of reference that allow logical conceptual thought to develop. The understanding of a concept does not necessarily happen with the presence of certain one-word connectives or clause connections but through a reshaping of one's thoughts using language.

An example of organizing and reorganizing an idea to order an experience was evident in the second session of social studies. In everyday classroom interaction, the complexity of the reshaping might be impossible to detect. However, a verbatim transcription demonstrates that the logic of eleven-year-old students is quite complex and sophisticated without the presence of one-word connectors.

Maggie attempted to make sense of the economic realities of a time removed from her everyday experience. The demands of the task made specific demands on Maggie's thought and language. To demonstrate the processes of logical thought, all other group members' language was removed, leaving only Maggie's language for analysis. Using this technique revealed the logical organization of a concept by Maggie's reworking of the concept. There are six major reshapings of

one central concept; the concept of the fur trade economy in New France.

Maggie uses her language in this first stage and showed her exploration of the economic concept of cost of furs and cost of production. The content of her talk demonstrated the aspect of relationship between:



Even her linguistic manipulations of "rising up" indicated the exploratory nature of her language. She then moved the relationships into people's actual economic transactions. Either the price will be too high, or people too lazy, or the fur trade will go out of business. But Maggie began to give shape to thoughts about economic relationships on the fur trade.

Lani: My turn?

Maggie: Um . . . how the costs for furs. . . .

Craig: How they rise. . . .

Maggie: 'r they expensive? Are they rising or'r they cheap rising?

Maggie: No, I mean are they cheap rising up, expensive rising up or . . . just rising?

Maggie: Well, do you think they should rise? . . . D'you think we should put a stop to it?

Maggie: But what about the production? . . . cost of producing or whatever.

Maggie: It costs a lot to produce the furs . . . they don't just . . . they don't just tear them off the animals back and give them to them . . . right?

Maggie: Yeah, yeah . . . that's a lot of work.

Maggie: Yeah, I know but that's work . . . and it . . . so it should cost . . . shouldn't cost.

Maggie: Yeah, not. . . .

Maggie: Yeah, you can make it into a lot of stuff . . . people are just too lazy to go out and . . . so they think if they can buy something then. . . . If they can buy it then they're okay . . . but if it gets higher . . . but if the price gets higher then a lot of people are going to buy . . . if the price gets too high people are going to go hunt by themselves and then . . . the fur trade will go out of business. . . right? . . . if the price gets too high.

Maggie: No one's gonna buy, right?

In the second reworking of the concept, Maggie now includes consequences for the fur trade if prices are too high or low. She even offers a very logical solution:

"You know not too low and not too high just like in between".

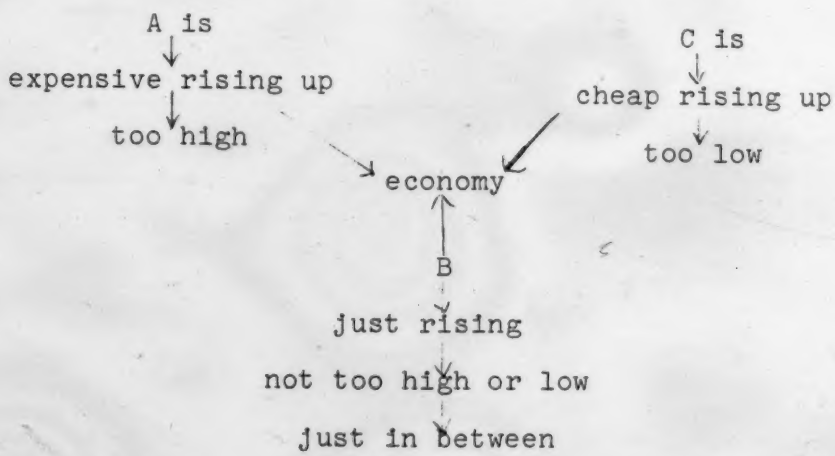
Maggie: Yes, they would love steak . . . they eat any . . . .

Maggie: Anything that can get the . . . anything that

they can get their nice, juicy chompers on . . . okay, but anyway . . . now let's see . . . so the cost of production . . . should be expensive but not too expensive because if you put it too expensive nobody's gonna buy them and they'll go out and hunt them by themselves.

Maggie: Okay . . . so . . . but if we . . . we sell them we don't have some too expensive because then people will umm . . . people will think (interuption) people will think that there'll be some cheaper they can go get them for free . . . so I think we should put them at a . . . in between . . . you know, not too low and not too high, just like in between.

Maggie reworked the same economic concept for a third time, yet used a different example. She drew upon an everyday experience from her knowledge of the concept of marks. The concept was linked as follows:



Maggie: Just like in A. . . .

Maggie: Well, it's just like an A and a. . . .

Maggie: An A and a C . . . A's . . . like in a mark . . . A and C we give 'em it . . . it'd be a B . . . like middle.

Maggie: Some stuff could be either really cheap and some stuff could be really expensive but that's what we'd have to do with it because people don't want it but then they'll (don't?) have to buy it.

Maggie: They can go out and buy it . . . well even and that's just . . . well when you get to go back to New France I would like you two guys to work something out . . . the prices . . . and see what happens and come back and tell me . . . okay.

In the fourth stage of the conceptual evolution, Maggie explored the buying potential of money. In this reworking of the concept, Maggie's language indicated a clearer understanding of the concept she herself was attempting to organize. She introduced the concept of average as the middle ground of cost that she had created previously in the third sample with:

B

just rising

not too high - not too low

just in between

Maggie: Oh, that's what . . . the economy yeah . . . we could . . . we could . . . whoever wants to buy them cheap or expensive or average can buy them . . . whoever wants to hunt them can have them. . . .

Maggie: That's because if people are going to buy they should have the money and know what the prices are going to be because . . . you can't . . . get everything you want all the time . . . like you can't say "oh now this is no good, it should be fifty cents and you can buy it for fifty cents and everybody has to pay a dollar . . . it's getting ( ). Everybody had . . . like if you go and um . . . you . . . you say (changes voice) "oh this is a dollar, it should be fifty cents" and then . . . you say "okay" to the boy, "you can have it for fifty cents" and everybody else has to pay a dollar . . . you can't get your own way with that.

Maggie: You can't get mad at stores because stores don't usually price things. . . .

In the fifth reworking, Maggie shaped her concept of cost of production by incorporating the hypothetical case of producing a chocolate bar. She also intorduced a voice of authority "a girl from Paris" to justify her organization of the economic concepts.

Maggie: Yeah, like a chocolate bar's reg . . . always

. . . most forty cents . . . ever . . . regular stuff . . . but if you go and get it there. . . .

Maggie: If you make your own chocolate bar it'd take . . . about . . . 'cause if you make a chocolate bar . . . say you have to put . . . cocoa in it . . . right (others mmm), say, oh, you have to put cocoa in it . . . so you have to put . . . five table . . . no, five tablespoons, okay . . . of cocoa . . . and you put . . . chocolate chips.

Maggie: You have to buy a thing of it so that's a lot of money . . . right?

Maggie: Mea . . . 'cause they have to buy it because they make 'em one after another, so they should just ( ) expensive one.

Maggie: You know what they charge you in Paris . . . for a chocolate bar . . . a $1.25.

Maggie: A small chocolate bar like we have . . . I know this girl who is from Paris who told me this . . . she told me yesterday.

Maggie: A buck twenty five! . . . and you have to pay three dol . . . two or three dollars for a large one.

Maggie: No, Paris it is . . . he told me yesterday . . . Paris . . . most things are expensive.

Finally, Maggie moved the economic "now" of marks, stores, and producing chocolate bars, back to the "then" of the fur

trade. It appeared that she had reorganized and defined for herself the concepts of economy and was able to risk exploring the past reality of the fur trade economy.

Maggie: (reads) Tell the king how you are going to expand the fur trade.

Maggie: But y . . . y . . . why you're goin' to expand the fur trade . . . is. . . .

Maggie: You go . . . people go. . . .

Maggie: Some of the French people go out and hunt and give it to the fur people . . . fur trader.

Maggie: They . . . and you go and have and give it to the people.

Maggie: But you get really good furs so you can trade two for one . . . like trade two pieces of . . . like. . . .

Maggie: Two pieces of fur for one big piece or something.

Maggie: Yeah, but if we . . . we could have just like . . . you could trade . . . like some . . . one for one but you would trade . . . you would trade one um. . . .

Maggie: Two small ones for a big one . . . but you might trade two for one even if . . . you might trade two big . . . one, one . . . one big one and one big one . . . but one big one and small one . . . one small one for one big one . . . about the same size . . . right?

Maggie: Okay, you trade two for one . . . like you get one big one and one big one to trade . . . but one of the . . . the one that you're going to trade is <u>better</u> so the other person has to give you a little beaver pelt . . . and a big one for the big one that you want.

Maggie: Like, it's better . . . it's better . . . better.

Maggie used her language to organize her thoughts about the economy of the fur trade of three hundred years ago. There was limited to nil use of one-word connectors. Neither did Maggie talk in complete clauses or sentences, yet the six sections seemed to indicate a use of language to explore and organize the concept of the fur trade economy.

<u>Summary of Social Studies Discussions</u>

The economic and historical nature of social studies was removed from the students' everyday realities. However, the students shifted their everyday knowledge with the scientific aspects of the social studies task. The shifting of the two types of concepts is indicated by the constant shifting of content, cognitive strategies and social strategies. The difficulty of working a scientific concept, such as monopoly, from an abstract generalization to a workable concept for the students, demonstrated the importance for the students of using their language to elaborate, clarify, question and order their thoughts. The evolution of specific concepts and generalized ideas was discussed using the example of one student's language.

Science Discussions

The Nature of the Science Task

The nature of the task in science was developed from the regular class work in which the students were involved. The students were studying the parts of plants, the functions of the parts of plants, the internal processes of growth in plants, the role of air, sun, and water in the growth of plants. Each student was growing her own plant for observation in the science room. The students mentioned they kept notes on their observations but did not discuss the topics of plants as was done for this exploratory study. It appears the teacher expected the terminology and content of the science lessons to be understood by all students in basically the same depth and form.

The first session was to determine the students' use of science terminology and concepts for explaining certain phenomena of plant life which the students had studied during regular science lessons. Since the students were working with concrete material, the twigs of plants, their language indicates that they did not always have to be explicit in discussing the parts or purposes of plants. The second session in the science discussions was to provide an experience that would require the students to use more explicit language to describe and explain the task given them. A game was devised whereby the students of one group placed numbered twigs on a board while talking into a tape

recorder. The tape, in turn, would be played by another group who had to guess which twig went in which box. Although the enthusiasm of the groups was high, the language recorded was impossible to transcribe because of too many recorders being play at one time. Also the groups kept turning the tape recorders off and on without any clue as to what discussion was taking place about which twig. Therefore, most of the language is transcribed from the first science session (see Appendix M).

Lack of Elaboration in Student Language

One of the first notable features about the students using their language to learn in the subject of this type of science lesson was the sparse use of elaboration individually or between the group members. The reason for this lack of extended elaboration of language to learn about the parts and purposes of plants could be any one of several reasons. Firstly, the students have interpreted the nature of the task to be in the purely transactional mode, in other words, just to get something done. Perhaps they felt there was little need for clarification or questioning of what they were learning. Secondly, perhaps the students, especially in science, have developed a pattern from regular classroom lessons that inhibit the students from using their language to learn. In regular classroom lessons, science may tend to lend itself to a pseudo-discovery approach and in fact, the students may just need to give one-word answers using subject

terminology only. Finally, the students may have a tacit understanding about the classification and framing of knowledge as defined by Bernstein (in Young, 1971). In the classification of knowledge there is a well-defined boundary between the knowledge of subject areas. Thus, the students may tacitly understand the language of science is limited to a specific use as compared to another subject area. In framing knowledge, the control of language for learning within the subject area of science may inhibit the students from using non-scientific strategies and content to make sense of the task. However, and for whatever reason, there are certain patterns that do exist in the students' use of language to learn about scientific concepts.

The Use of Similes in Scientific Observation

In an attempt to understand the different parts and purposes of a plant, the most common use of language to learn was through the creation of similes. While describing appearances or function of different parts of a plant, the students created sensory images with their language. Even when the use of a simile failed to clearly aid in the description of structure or function, the students seem to revert to a use of vague vocabulary such as: thingie, stuff, whatever, kinda, sorta and other indistinct words.

In this first example of language for learning in science, the students are attempting to describe a twig and its different parts for another group. The more explicit the

describing group is, the better chance the selecting group has of choosing the right twig out of several.

Claude: And they smell horrible . . . and at the bottom there's . . . something that looks burnt a little.

Kate: It smells horrible . . . these flowers on this plant are like roses . . . they're . . . sorta' shaped like roses.

Pam: They look it . . . but they're sorta' long.

Kate: Like . . . okay, we're gonna' go on to number B . . . okay this plant . . . has like berries on it . . . sorta' like berries. . . .

Marty: It looks like a peppermint stick with fern leaves on it . . . no peppermint sticks have little. . . .

Pam: It smells nice . . . it's an okay smell and it's soft leaves and it's kinda' long stemmed. . . .

Marty: This looks like . . . um . . . this looks like a. . . .

Pam: This is in Box B . . . number . . . it's got buds . . . it's got leaves and it's got pinky things on the end . . . and it's got a furry leaf on the middle of it. . . .

The content and strategies the students use are reminiscent of Britton's category of expressive-transactional language (Chapter 2, p. 39). The students did not have

the terminology of scientific description to use the transactional categories of Britton's model. The lack of botanical terms makes demands on the student's language to learn about parts of a plant so they shift to the expressive-transactional mode. The language is expressive as indicated by the use of:

1) personal evaluation of smelling "horrible"
2) it's an okay smell
3) they're sorta' long
4) it's soft leaves
5) it's got pinky things on the end of it.

"To get the job done" of describing what the parts look like, the students use the transactional aspect of language to make sense as follows:

1) they're sorta' shaped like roses
2) sorta' like berries
3) it looks like a peppermint stick with fern leaves on it

The language of the expressive-transactional seems to get the task of description fulfilled for the students without the formal language required by the subject specific terminology.

If the demands of the realities of scientific observation and recording are relevant and shape the thoughts of the students, the language they use would indicate whether there is an understanding of the content of science. The language strategies of the students would also indicate whether the students are shifting thinking strategies to construct a

clear representation of the content of science. However, the nature of the task requiring description and naming only produced in all examples of the discussions in science the use of similes for expressing ideas. The only time that formal scientific terminology was used is when two different students used the names sepals and pistols to describe parts of the flowering parts of a bud. Jen and Craig used examples of scientific terminology in the following:

Jen: Sometimes when they're dried out you can open them up and there's little sepals on it . . . and sometimes they're slimy and there's guk all over them.

and also:

Sally: See look . . . see . . . it opens up . . . it's ready to open . . . we really shouldn't do that.

Craig: That's a pistol.

Besides the use of similes to describe the appearance of parts of the twigs, the students used their language to describe other features of twigs, but usually with the use of similes. One example from different discussion groups are as follows:

Sharon: It's pretty disgusting.

Sally: Prickly kinda' like . . . but not pretty prickly. . . .

Donna: It's kinda' nice . . . it . . . it looks neat.

Sally: It does look kinda' pretty . . . it just has

these little brown things going fifty miles an hour and um . . . the coverings of them? I'm pretty sure it's a little pretty underneath . . . they do have brown things . . . look <u>like</u> freckles really . . . well they do you know 'cause . . . 'cause they ( ) yeah they do.

Sally: And the leaves have almost <u>like a</u> waxy covering . . . feel them . . . feel them . . . feel them . . . feel them.

Donna: Yeah, they do have . . . a waxy feel.

Sally: They're waxy kinda' <u>like</u> . . . turtle wax.

In this and other sections of the student discussions, there is a build-up to descriptive meaning and with the addition of each simile, the details of the concrete material becomes less and less vague. Eventually, with the image building, the students were able to use their language to learn about the parts of a plant. In the game of session two in science, the descriptions using similes do enable the students to place twigs in the correct boxes based simply on the language of the students from another group.

The students used other sensory imagery besides sight. The other senses were called upon to make sense of the other sections of the task such as texture and smell. Some actual examples from the students' discussions are as follows:

1) Feels like a scrambled egg
2) The leaves are kinda' like sticky
3) Smells like Vicks up your nose

4) At the top it looks like bull horns and . . . and one looks like three bull horns

5) It has this porcupine thing at the top . . . that thing . . . what is this? A pine cone . . . ah

6) The leaves are . . . um . . . like ferns . . .

7) But they're not flowers. They're sorta' like . . . like those weeds . . . that are sorta' like fox tails.

In the following passages it becomes clear how the students use their language to create a more detailed image of the twig they are describing.

(Sharon continues to describe C)

Sally: Okay, that's C.

Donna: Shriveled up . . . no. . . it small at all?

Sally: It stinks okay.

Donna: And it's got shriveled up leaves . . . and um . . . C.

Sally: C as in cat.

Craig: Okay this . . . has a good smell to it. . . and it has green things sticking out of it and a long, bumpy stem with sorta' of like a little . . . sort of little flowers spurting out of the top . . . and it looks something like a pineapple.

Sally: It looks furry.

Sharon: A cactus . . . .

From the information that a part of the twig is shriveled

up, the green things sticking out, to a bumpy stem, little flowers spurting out to a furry twig and finally to a cactus appearance, the details on the twig become clearer. With each additional image, the twig could almost be drawn accurately from the students' language.

Poetry in Science

If the expressive mode is one of the language strategies that students use to learn about scientific knowledge, perhaps greater consideration should be given to the expressive-transactional function of language to learn. A reading of the journals of famous scientists demonstrates the necessity of the poetic use of language as well as the transactional use of language to learn. Darwin used his language to explore the meanings of his environment, yet did not use just the transactional mode. At times it seems important for him to use the poetic and the expressive functions of language to explore. Perhaps it was these very functions that actually clarified his understanding of nature that lead to his theory of evolution. The following is a passage from his journals:

> . . . Amongst the lower animals, nothing has so much interested me as finding two species of elegantly coloured planariae (?) inhabiting the dry forest! The false relation they bear to snails is the most extraordinary thing of the kind I have ever seen. In the same genus (or more truly, family), some of the marine species possess an organization so marvellous, that I can scarcely credit my eyesight. Everyone has heard of the discoloured streaks of water in the equatorial regions. Once I examined was owing to the presence of such minute Oscillatoria, that in each square inch of surface there must have been at

> lease one hundred thousand present. . . . I might collect a far greater number of specimens of invertebrate animals if I took up less time over each; but I have come to the conclusion, that two animals with their original colour and shape noted down, will be more valuable to naturalists than six with only dates and place. . . . At this present minute we are at anchor in the mouth of the river; and such a strange scene it is. Everything is in flames - the sky with lightning - the water with luminous particles - and even the very masts are pointed with a blue flame (p. 4).

In the student discussions in science there appeared to be indications that a poetic form of language is important to making sense in science. The following passage is an excerpt from the students' language. Written <u>verbatim</u> from their language, without the name of who is talking, the students' language to learn takes the content and form of a poem.

Okay.
These little thing a ma jig eees
What are they?
They grow on branches,
They look like fuzzy caterpillars
Hum.
Yeah.
They do?
Okay.
These little fuzzy things
Shed very much so
And they are green.
These are baby ones
and . . . um . . . .
These . . . .
They look like little caterpillars
They're really
They look like baby ones
These look like wooly little caterpillars
They're fuzzy
And curl around your fingers
Right?
Curl around your fingers.
I'm doing this one
And they don't taste very good.

by Claude, Marty, Pam

The students are describing the catkin bud of a poplar tree. They do not use formal scientific language to learn but in their poetic form of language they have described a catkin's position on a tree, the texture, the size, the taste and the fact that when catkins mature they shed "very much so".

Spontaneous Language Vs. Scientific Language

The students, without adult control of their language to learn, indicate their way of working into the meanings of a task. Without the control of an adult to limit the students' explorations and discoveries, the students do attempt understanding of scientific concepts but need to rely on spontaneous knowledge and syncratic use of language to learn (Vygotsky, 1962). Sometimes, while using the syncratic processes of thought to understand and also using their spontaneous knowledge of the world, the students do move into the realm of scientific concepts and complex thinking.

Two examples of talking their way into higher level meanings and into using scientific concepts occur with the students' understand of 1) sap and 2) bud. In the case of sap, which was located on several samples of twigs, the students noted sap as a feature of a plant but never used the scientific word for it but began to work into the concept of sap. One group noted it firstly as:

Kate: It's hard with jello-orange stuff on it.

while another noted in confusion between sap and water that:

Joan: And sometimes they're slimy and there's guk all over them . . . yeah.

Connie: Yeah, it's water, not slime . . . err . . . it's slime.

and later in the discussion:

Joan: It's kind of sticky, it has this kind of syrup but . . . they leave a coating on your fingers. . . .

The groups never reach a full understanding of what sap is. They seem to fail at transferring the terminology they have learned in regular class science lessons to the reality of what sap actually looks like. In other words, they have used the term sap in class in responding to the teacher's questions about what is inside as well as using the term to fill in diagrams to name the parts of a plant. It appears the students maintain a "school knowledge" about sap but are unable to use the concept for "action knowledge" (Barnes, 1976, p. 79).

Some groups have difficulty deciding what are buds, what are seeds, what are cones or whether all three names are actually the same part. Group four, when trying to order the twigs from youngest to oldest, have difficulty with defining what part of the twig is actually the bud. They use a variety of strategies to try to determine just what is a bud.

Researcher: All right . . . why did you put this one

first?

Sunny: 'cause . . . 'cause that's the one that had the youngest seeds on it . . . so we just stick it there. . . .

Researcher: Where are they?

Alta: . . . right there.

Sunny: They're right there.

Researcher: Where are the buds?

Alta: Um . . . buds . . . there aren't none.

Liz: There are the buds. . . .

Researcher: Are they?

Sunny: No.

Researcher: You say they're buds and you say they're seeds. . . .

Sunny: 'cause the seeds come from the fruit.

Researcher: Why don't you break them up and look inside?

Liz: You could use the plant 'cause the seeds have to come first.

Jack: Look at this.

Researcher: Show everybody . . . break open some of the buds . . . but on each twig only open one bud . . . and see what you actually think they are.

Liz: I'm breaking on this.

Jack: ( ) are these the buds?

Sunny: Buds . . . yeah that's a bud.

Jack: What about this one? . . . I've got a bud . . . well anyways, it's got a thing.

Alta: What is the bud on this sucker?

Liz: Bud . . . that's a . . . .

Jack: Hey! This is a seed . . . hey.

Liz: I don't want to touch it.

Jack: There's seed in here . . . those yellow thingamajigs.

Sunny: Those are flowers, you dummy.

Jack: They are not . . . see that's a bud . . . yep.

Liz: That's a bud.

Sunny: No it isn't, look . . . look.

Liz: Yes it is.

Alta: That's a bud . . . that's a bud.

Jack: Look . . . look you can scrape those things out . . . look.

Sunny: I can't get this sucker open . . . it's too small . . . I'm just mushing it.

Jack: Yeah . . . I've got small fingers . . . look . . . see you can scrape these things out.

Sunny: Let me see these suckers ( ) oh look, they're . . . bright red . . . look at that Jack . . . it's a bud . . . okay, so it's a bud . . . the bud comes first.

Liz: Nooooo.

Sunny: Yes.

Liz: First things . . . then the seeds.

Sunny: No it isn't . . . okay let's ( ) this one open.

Liz: Don't you understand Sunny . . . that you plant the seed . . . to get the plant . . . so the seed comes first. . . .

Sunny: I think that these are the . . . that's seeds in there.

Liz: No . . . isn't.

Jack: Let's go to the next question.

Sunny: But the seeds come first.

Liz: Are these flowers or are these buds?

Jack: They look like buds.

Researcher: Okay, keep on talking about it . . . 'cause you . . . it is. . . .

Sunny: We can't figure it out see . . . she says it . . . the seeds come first and I say the buds ought to come first 'cause they're ( ).

Researcher: Hmmmm.

Sunny: And we got another ( ).

Researcher: ( ) also comes from seeds.

Sunny: No, but they're buds.

Researcher: Did you break one open?

Liz: Yeah.

Sunny: Just the buds . . . and also there's one other thing here that was buds and it had a red thingamajig on it and there were little white pods.

Liz: No that isn't it.

Jack: That's what I said to the rest.

Sunny: Ah . . . see those little red thingamajigs.

Liz: But you need the seeds to start the pods.

The students' language seems to indicate they had learned the terminology for the part of the plant called the bud, but had difficulty determining just what feature of the plant is a bud. At one point the terminology even changes and the students are using bud, seed and pod interchangeably. The students of this group called in the researcher because they were having difficulty in deciding which part of the plants represented the youngest to oldest ordering of the twigs. The researcher questions the students' concept of whether they are talking about a bud or a seed. Each investigation, both linguistically and concretely, into the features of the bud reveal new information; is it a flower, a bud, a thingamajig or a seed? The students bring their knowledge to the task as indicated by statements such as:

1) Sunny: 'cause the seeds come from the fruit.

2) Liz: Don't you understand Sunny . . . that you plant the seed . . . to get the plant . . . so the seed comes first.

When they continued to use their knowledge of plants that

they brought to the task and explore further into the new information presented by the concrete sample of a plant, the students not only explore the new information but discover the previous understanding of the information they possessed about plants was not clearly understood. In turn, the students use their language strategies, i.e. questioning, debating, ordering, etc. to reconstruct the previous and the new information into new meanings for the scientific terminology of the parts of a plant. Whether the new understanding is accurate or not, the students have used their language to learn. The students have talked their way into meaning with more clarity and depth than they originally had understood. In controlling their own learning through using their own language, the students revealed their conceptual thinking as well as the processes they use to understand what they are learning.

The Problem with Hidden Scientific Information

Although the students in the science discussions are handling concrete material, there are certain aspects of the task that require the students to make sense of hidden scientific information. When asked what the purposes are for the different parts of a twig, the interpretations of the task differed from group to group. However, two general interpretations by the students were evident. Three of the four groups were able to discuss briefly the scientific purposes of the plant parts but switched to outer functional

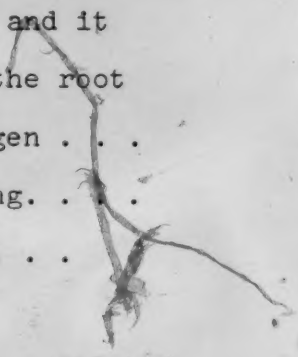
purposes. One group seemed to interpret the task as a function removed from the inner, hidden purposes of the plant parts. In scientific formulation, one of the difficulties for students supposedly engaged in the "hands-on" approach of science is that many of the concepts are hidden or abstract. In the case of the regular classroom lessons on plants, the students are using concepts like carbon-dioxide, minerals, reproduction and other concepts that they can not experience in a concrete fashion as they can with the concepts of buds, flowers and seeds.

The language of the students presents an indication that they have learned some scientific terminology that they cannot concretely experience. The information about gases, reproduction and nutrition would almost have to be presented in a transmission model of classroom knowledge. Yet, at the same time, what understanding the students had of the purposes of different parts of a plant would remain purely an assumption. When the teacher turns control of language and learning to the student, what misunderstandings or lack of understanding the students had about the hidden purposes of a plant might be presented in the students' language.

The following section of student language shows that the group shares an understanding of the task required. The passage is mixed again with scientific terminology of the subject and the spontaneous language of the students.

Pam: The purpose of this part . . . the stem is for like . . . so that . . . holding leaves

. . . the stem is like for the roots when it goes out into the ground right? . . . and it goes out like this right? . . . then the root can go out . . . and it can bring oxygen . . . not oxygen . . . mmm . . . it can bring. . . .



Kate: Food . . . food . . . from the earth . . . into. . . .

Pam: The leaves to make the leaves grow . . . it grows these little long green things . . . things. . . .

Kate: Those are acorns.

Marty: Those aren't acorns . . . those are pine cones.

Kate: Pine cones.

Pam: Okay, what they do is they . . . they grow pine . . . this pine tree but those pines . . . oh, smells excellent. . . .

Claude: Are those blueberries?

Pam: These ones ( ).

Calude: Or raisins.

Pam: Okay . . . okay . . . the white flower . . . this white flower or . . . Kate. . . .

Kate: This white flower. Okay, the purpose of this stem is for . . . so the leaves can . . . bud in spring or whatever . . . and so the flowers can bloom. . . .

Pam: ( ) these flowers, flowers . . . are

flowers (laughs) these flowers are little white flowers . . . they carry . . . I forget. Here Claude.

Claude: Ah . . . the stem carries food to the end . . . and minerals. . . .

Pam: Minerals?

Claude: Not mine. . . carries foods up to the. . . .

(?) Stem.

Claude: Leaves and the flowers . . . Marty. . . .

In the next passage the students begin with the technical information about the purpose of the plant parts and then shift to the purposes of plant parts as a function of the uses for humans. The shifting occurs when Connie asks for the purposes and answers her own question with an aesthetic purpose for plants.

Gail: What is the purpose of each part?

Connie: The leaves are for food.

Joan: And the buds.

Connie: And the leaves . . . the leaves are for bringing carbon . . . carbon dioxide and, and gas . . . and put out oxygen.

Joan: Tell me . . . what are the flow . . . the buds for and the flowers?

Tara: To have . . . flowers are to get rain.

Connie: And to get, um . . . new trees and reproducing.

Gail: To get new twigs.

Connie: What are their purposes? This is the purposes for pretty. . . .

Joan: Purposes for beautiful. . . .

Gail: 'cause this is a pink rose.

Joan: Sometimes they are used for homes . . . and food.

Connie: This one's purpose is for pine trees all . . . all plants give in carbon dioxide and give out oxygen . . . so if they give out oxygen, we'll have more oxygen.

Tara: That's right Cynthia.

Joan: And um. . . .

Tara: See, the Indians used to use these pine things for their costumes . . . ( ) used the needles and stuff like that. . . .

Gail: And for the pine trees . . . for the pine needles they used to burn them.

The group continued to discuss the purposes of plant parts as medicine, pemmican for Eskimos' insulation for squirrels' nests, and as a source of honey for bees. Another group also focused on the human use of plant parts within their discussions of the "hidden" purposes of plant parts.

Conflict in Science Phenomenon

Barnes (1976) mentioned in his study of group work how some groups took very few risks at using their language to

learn and would reach a consensus very quickly. However, groups that risked conflict within their discussions provided a richness in language use that indicated a richness in learning. In the science discussions most of the groups simply added information of detail and the inquiry aspects of using language to learn became a piling of facts, one on to the other, with a limited reworking of ideas. The pattern of language indicated more of a construction of knowledge instead of a reconstruction of knowledge. Construction of knowledge is important and functional, however, learning is neither a building up of experience nor a static state. As Vygotsky (1962), Britton (1970) and others have stated, language is constantly shifting since the ordering of reality is constantly shifting.

In science, one group became involved in a conflict. When group four in the science sessions was required to order the twigs from youngest to oldest, the whole group became actively involved in using their language to work through the conflict. The nature of the conflict arose from the group's different conceptual framework of what came first - the seed or the plant?

The beginning of group four's discussion indicates the rise of the conflict:

Jack: Can you arrange the twigs from youngest to oldest? Tell why you think the twigs are older . . . in order.

Sunny: Okay . . . this one . . . the. . . .

Jack: ( ) did all that.

Sunny: One here . . . okay just a sec. This one here. . . .

Jack: That one shouldn't go there.

Sunny: Don't! . . . get one without the seeds . . . (whispers) . . . get one without the seeds even this one here has seeds on it. . . . Ah, this one here doesn't have seeds. . . . Yes, it does have a seed.

Jack: Okay, tear it off, then it won't have seeds.

Sunny: Ah, this one here has seeds.

Liz: We do not have any plants without seeds. . . .

Sunny: Then this one here should go last . . . oh, no, the one with the flower should go first . . . yeah, then comes the thorns with. . . .

Liz: Find the one with the flowers.

Sunny: . . . because after the normal plant then you get the flowers right . . . right? . . . then after. . . .

Sunny: The flowers you get seeds. . .

Jack; . . . and leaves . . . well, you get leaves first . . . seeds. . . .

Alta: You get leaves first before the flowers.

Others: Yeah!

Sunny: Well, you see . . . we had seeds on all of them so we just substituted that one . . . cut off its flow . . . leaves. . . .

Alta: We cannot decide.

Sunny: Okay. This one here should go last 'cause its got the seeds that are just ready . . . right?

Jack: Yeah, yeah . . . these one's here are pi . . . helicopters.

Later the discussion indicates more members are questioning the ordering of the twigs.

Jack: 'cause the . . . way of growth . . . that the way they grow.

Liz: That's the way we <u>think</u> they grow.

Jack: Yeah. . . .

Sunny: Well, that's the closest that we can come to them growing like that. . . .

Alta: We are not sure but it will have to do. . . .

Jack: Just wait . . . just ( ) they're there . . . 'cause remember . . . they get these before they get flowers . . . and they have to get seeds before they get flowers.

Sunny: No . . . no . . . but . . . no, no, no.

Liz: Yes they do . . . they have to get seeds before they get flowers.

Sunny: No.

Liz: Yeah, sure. . . .

(?): Yeah, man . . . freaky man.

Sunny: Okay, in an apple what do you get first, the apple or the seeds?

Tara/J/A?: The seeds.

Sunny: I mean the flowers . . . the apple or the seeds?

Jack: Apples don't have flowers.

Sunny: Apples . . . tree . . . an apple tree.

Liz: You get the seeds first.

Sunny: No you don't . . . 'cause the apples . . . you plant the seed . . . the seed comes from the apple.

Liz: The seed makes the apple.

Alta: Yeah.

Sunny: Noooo.

Liz: Yes it does. . . .

Sunny: The flower makes the apple . . . and you have to plant the seed. . . .

Liz: Just forget it.

Angie: Don't gorget it.

Jack: Not to confuse it.

Liz: You have to plant an apple seed yes . . . then the tree grows you know and it grows (the fruit?).

Sunny: Noooo.

Liz: Yes!

Alta: We have a . . . con . . . confume. . . .

Sunny: Confu . . . an argument.

Alta: We have an argument. . . .

Sunny: I still think that it's . . . because which one comes first? What do you mean. . . .

Alta: We are not sure if the seed comes first or the

flower comes first . . . so that's our argument . . . alright you guys, let's go on to the next one.

Sunny: ( ). Okay, you take your seeds . . . you go outside. Okay . . . the flower comes . . . then you get flowers on it okay . . . right?

Alta: Let's go back to this question then.

Liz and Alta have now decided that the seed comes first, Sunny has decided the tree comes first and Jack remains neutral to this point. In supporting their argument, each group member draws on spontaneous, as well as scientific concepts. The cognitive strategies of the context demand social strategies to shift and support what each member understands as to why the twigs should be ordered according to their viewpoint. The argument continues, as noted by Sunny and Alta, and the line of inquiry reveals new learning about what buds actually are and are not. The discussion on buds, seeds and flowers was presented previously in this chapter on page 125. The argument, and "confus-on" according to Alta. continues. Solutions begin to appear as Sunny asks to "go to the library to find a book on growth and stuff and find out?" Liz and Jack suggest they move on to the next question. When Liz mentions she has a point to make, Sunny summarizes the whole conflict in stating "all of us have a point to make." When the book offers no solution to the conflict, the final solution is determined by Sunny's decision to place "the buds here" (first) and the flowers here" (last). Liz still

does not concede her point until she states, "Okay, let's go by flowers."

The conflict proceeds and ends as follows:

Sunny: Okay, let's forget about the planting of the seed. . . . You have your tree . . . okay . . . a nice little tree, okay?

Liz: Yeah, but how did you get your tree?

Sunny: Klunk (motions bang on head).

Liz: You planted a <u>seed</u>.

Sunny: Yeah . . . but you see you planted a seed to get the tree. . . .

Liz: A little seed produces other seeds but a plant ( ) other seeds tree.

Sunny: Yeah . . . yeah but the thing is . . . you couldn't get that seed unless you had another plant . . . so the other thing is . . . but not the flower comes first. . . .

Liz: No, but well. . . .

Sunny: Yes, it does!

Liz: You got from the seed to . . . to a stem . . . then to the . . . plant.

Sunny: No, you go from the . . . in growth of the plant . . . in growth of a plant you see it comes first. . . .

Sunny: (to Researcher) Can I go to the library to find a book on growth and stuff and find out?

Researcher: I'll go get you some.

Sunny: Okay.

Liz: Let's go to the next question then. . . .

Sunny: Okay. First of all . . . okay, if we can't find out if ( ) grow things or something like that what we'll do is we'll agree on both . . . and both . . . and that . . . and at least one of us will be wrong. . . .

Jack: Okay let's . . . can we go on to the next question? I'll read it.

Liz: Yes, but I have a point to make . . . see.

Sunny: All of us have a point to make . . . your point is that the seed came first . . . and that you are right in that but my point is that (whispers) it came last. . . .

Liz: But it says in the book . . . in the book. . . .

Sunny: The tree came before the seeeeed . . . okay, I'll read the next question. Well, the oldest to the youngest isn't even in the book . . . the oldest one. . . .

Alta: Let's go on to the next question.

Sunny: Okay, okay, okay. We're just going to put the buds here . . . and the flowers here.

It appears from the science discussions and the other subject area discussions that when conflict arises within the group, the use of language becomes important to reconstruct as well as construct a more elaborated sense of understanding and a vivid use of language to learn.

Summary of Science Discussions

Although the students had been studying an unit on plants, there were limited indications they transferred the technical language of science to the actual practices of science, such as observing and describing. When the control of the scientific knowledge was the student's responsibility, they used their own language to learn. The students did use some scientific terminology to make sense of subject concepts but tended to rely more on the expressive and poetic functions of language to learn. There was previous knowledge or spontaneous knowledge used by the students to spiral into the concepts of scientific knowledge. The students also had some difficulty understanding vague phenomena of plant life as well as some difficulty in transferring assumed understandings of concrete phenomena to the tasks of this study. Overall, the students, given an opportunity to use their own language to learn, incorporated a variety of language strategies and scientific content to give their thoughts a reality and a form.

Poetry Discussions

Repeating the Lines to Find the Meaning

Each group of the poetry sessions used the same techniques to order its thoughts about the poems. The researcher rotated to each group for a silent observation of events. In rotating, the researcher discovered that each group kept repeating the lines of the poems several times.

In fact, group five decided to have each member of their group take turns reading the same poem in as many ways as was felt to be appropriate for further understanding.

Sometimes, the poems were read over and over in their totality. Other times, a group member would read a line over. This constant repeating of the poetry seemed, to this researcher, a complex technique of the students to explore the meaning of the poem by intonation.

As the students attempted to establish interpretations of the poems, in their own words, it became evident that the students had some difficulty in using exploratory talk. Several possibilities might exist as reasons for these difficulties in poetry interpretation.

1) Perhaps the poems were far too removed from the linguistic and experiential resources of the students.
2) Perhaps the constant repeating of the poetry was sufficient to the students' intuitive understanding arrived at through dramatic interpretation.
3) Perhaps because of previous experiences in school the students felt that the nature of poetry required closed answers instead of an ambiguous, open, and personal variety of responses.
4) Perhaps the students were not able to interpret the particular symbolism used in these poems.
5) Perhaps the nature of the tasks placed restrictions on the students' use of their language to explore

meanings.

Whatever the reason, the students did attempt ordering of their thoughts about the poems.

The Two Sides in Each of Us

The following table, labelled Poems Discussed by Groups, indicates what poems were discussed by each group.

Table 12

Poems Discussed by Groups

Group #	Me and I	El Condor Pasa	No Difference
1	yes	no	yes
3	yes	yes	no
4	yes	yes	no
6	yes	no	no

The groups appeared to have similar thoughts about the poem Me and I. The students offered several possibilities for the me and the I of the poems. Table 13 will indicate the use of opposites that helped the students make sense of me and I, which are the same person. The content of the students' interpretations seemed to remain true to the nature of the poem.

Most of the ordering of thoughts about the poem Me and I incorporated limited use of students' language. The following example is included to show the repetition of lines from the actual poem with very limited elaboration or

Table 13

The Opposites for Me and I

Group #	Me	Neutral	I
3	1.	cannot make up mind	-
3	2. wants to act	-	wants to stand around
3	3. mad	-	calm
3	4. hates somebody	-	inside I like them
3	5. not talk to a person	-	talk to them
3	6. partly mad	-	partly sad
6	7. half is mad	-	half in tears
6	8. -	cannot decide	-
6	9. a guy mugs her	-	she beats up her own kids
6	10. -	cannot decide what to do	-
6	11. -	how to act	-
6	12. good mood	-	(?)
6	13. devil	-	angel

Table 13 (continued)...

Group #	Me	Neutral	I
6	14. mad	-	sad
4	15. you're mad	-	really not made deep down inside
4	16. -	different feelings of people	-
4	17. -	all different feelings	-
4	18. mad	-	sad
4	19. scream	-	mean
4	20. Jekyll	-	Hyde
4	21. talk about thing	-	talk about somebody else
4	22. say that	-	don't say that
4	23. -	shouldn't listen to little voice inside	-
4	24. -	may be harmful	-
4	25. -	lady on Fantasy Island with split personality	-

Table 13 (continued)...

Group #	Me	Neutral	I
4	26. they feel a little sad	-	then they're mad at me
4	27. happy	-	sad
4	28. -	having fun together	-
4	29. kill my brother	a	I'll get in trouble

clarification of thoughts by the students. This example typifies the language of groups one, three and six. The lines repeated or paraphrased from the poem are underlined.

Sharon: What do you think it means (refers to Me and I) . . . whoever they're talking about . . . has a . . . has a personality that can't make up its mind . . . can't make up his mind very well.

Paul: Her . . . or his . . . I don't know. . . .

Sharon: 'cause one minute it says . . . "<u>sometimes when I'm mad there's a part of me that seems really sad</u>" so . . . split up like the ( ). . . .

(Researcher moves tape to pick up voices better)

Paul: I think um . . . I guess it means that she's gonna . . . she can't make up her mind and she's got something like a split personality . . . <u>one wants to act, one wants to stand around one's mad and one's just calm</u> . . . what do you say. . . .

Sharon: Let's call it a her . . . let's pretend it's a her.

Paul: Yeah, it's a her . . . I think. . . I think . . . oh yeah . . . I think that um, what it means is . . . she ah . . . is . . . has a split personality . . . just what you said. . . .

Flin: Okay. What parts make you think of yourself or someone else?

Group four did attempt elaboration of thoughts about the meanings of the poem. However, Sunny was a talkative person in all subject area sessions in which she participated. In some sessions, she dominated the discussion to the point of restricting the involvement of the other group members. In other sessions, Sunny's extensive use of elaboration of thought encouraged other members to expand their thoughts also. In poetry, the latter strategy of Sunny's, appeared to create extensive use of exploratory language. The following represents a sample of the typical elaborations of group four's language in poetry compared to the language of Sharon, Paul and Flin in the previous sample.

Alta: Okay, what parts make you think of yourself or somebody else? And why?
I think that parts that make me think of myself or somebody else . . . ah there's the first part here. It says "sometimes when I'm mad there's a part of me that seems to be a little sad . . . that makes me think of somebody . . . and . . ."

Claude: Why?

Alta: Oh, why? Ah . . . 'cause that's the way a person feels . . . they feel a little sad inside of them and then they're mad at me . . . ah there's another one . . . for like "sun and rainy weather . . . sometimes we're a hit

together" . . . that's . . . sorta like when we're a sun that means we're sorta happy and rainy weather can mean that we're sad . . . and "sometimes we're a hit together" can mean that we are having fun together and that makes me think of me and my friend . . . now to the next person . . . Sunny or Claude.

Alta did frequently use the strategy of quoting lines from the poem. On the other hand, Sunny quoted the poem only twice.

Sunny: Ah . . . I understand like . . . the section here with "sometimes I'm mad but there's a part of me that seems to be a little sad" . . . and then that section that goes "sometimes when I scream there's a voice in me that says you shouldn't be so mean" . . . well, that's really like me because sometimes I'm about ready to kill my brother and I just feel like screaming at him . . . little do I know that deep down, that if I don't stop screaming at him I'm gonna' get in trouble and that I shouldn't really be screaming at him even though he screams at me first. . . . ( ) anyways um . . . so . . . it's a really good song that just played . . . people like sometimes I think that I'm . . . g . . . .

Alta . . . sometimes when I get mad at her I think that she ah . . . keep but anyway uh . . . she's really nice most of the time and sometimes when I scream and yell at her I know I'm gonna be sorry for it . . . and that I shouldn't really do it . . . no I'm just joking. Now Alta, why do you think that something or other makes you think of someone else?

T.V. As A Resource

One unique strategy that the students used to make sense of the split personality aspect of Me and I was examples from T.V. shows. In the T.V. cartoon shows, Bugs Bunny and The Flintstones, tiny figures of a devil and an angel image sit on the shoulders of the cartoon characters. These concrete images helped Sally, Joan and Liz understand the concept of split personality. Sunny used an example of the film technique of split screen or double image to explain what is meant by split personality.

Sally: We're like the sun and rainy weather. See, half of you is sometimes in a good mood and then the other half is to go. . . .

Liz: Like the devil and the angel . . . like on the show . . . ( ) the Bugs Bunny.

Sally: Yeah.

Joan: And for Flintstones he goes "come on Fred, don't give up it's not nice."

Sally: Oh yeah. Like I'm the little pow dog you stupid ( ) and then the angel "don't do it Fred, it's not right" or something like that.

Liz: Right . . . so it's kinda like that . . . okay why . . . why do we think this?

Sunny's sample is as follows:

Alta: So two personalities.

Sunny: Like which they had in Fantasy Island . . . this lady . . . who had . . . well they did . . . they made her into a split personality . . . she had a split personality . . . and then they made it come true so now she had a lady with her who was a split personality. . . .

Elaboration of Thought in El Condor Pasa

Even between members of groups there was very limited elaboration of understanding about the poem El Condor Pasa. As Table 12 indicated, only two of the four poetry groups attempted an interpretation of the poem. Only one extensive elaboration of El Condor Pasa occurred and the elaboration occurred within a student's own talk with collaboration with other group members. Alta's interpretation of the poem is as follows:

Claude: Angie, what do you think?

Alta: Ah . . . okay . . . I think that the poem means . . . than um . . . that if you had a choice (don't pull that out) that he would rather . . .

if he had the choice . . . I think that he's rather be a sparrow than a snail . . . and a hammer than a nail and so . . . on because . . . it might be better and he wants to have a longer life (fool with recorder) . . . he says that I'd rather be a sparrow than a snail . . . well he probably . . . if he had a decision . . . to be a sparrow than a snail . . . I think he'd probably . . . he'd pick sparrow 'cause a sparrow would have a longer life than a snail 'cause a snail would be eaten by a sparrow . . . and hammer than a nail well . . . nails just get hammered in . . . and a hammer has like . . . longer to live . . . longer life . . . and he'd rather have a happier longer life . . . and right down here it says . . . "I'd rather be a forest than a street". I think that that means that he doesn't like to be crowded . . . he wants to be free and out in the wilderness . . . and um . . . "I'd rather feel the earth beneath my feet" . . . that means that he wouldn't rather go up to heaven, he'd rather stay down on earth . . . and "he surely would".

No Difference

What limited student language occurred in El Condor Pasa

also happened in the poem No Difference. One sample of dialogue between Craig and Tara of group one did occur. Because of the passage's use of language which was similar to Alta's use of language, the example from Craig and Tara is not included here in order to avoid repetition.

Summary of Poetry Discussions

The student use of language to learn and organize thoughts was very limited in the poetry discussions. The most common strategy used by the students was the frequent quoting of lines or extensive re-reading of the entire poem. Several reasons for the restricted use of the students' language were presented. However, in re-reading parts or the whole of a poem with different interpretation each time, is a use of a student technique to get at meaning. When students used their language to attempt an organization of their interpretations, the examples demonstrated the content and strategies that were available as meaning to the students.

Informal interviews held a week after the final taping session exposed a possible reason for the limited organization of student ideas in poetry. One student voiced the opinion of several students when she stated:

> "Poetry was the hardest work. Like it, like ah . . . you know . . . well you knew what they (the poets) were trying to say but you just didn't have the words to say what they (the poets) meant."
>
> (A student from this study)

The Mathematics Discussion

The Problem-Solving Approach of Mathematics

The task in mathematics was intended to present conflict among group members. This conflict was to arise from the problem-solving aspect of the task. To solve any of the problems presented, the students could not engage in simple mechanical functions of addition, subtraction, multiplication or division. To solve the problems the students would need to use the language of mathematics to interpret and manipulate several functions before the correct answer could be reached.

The language of mathematics remained very quantitative. The students did explore several combinations of functions. Most groups spent all their time on problem number one. Only one group solved the problem.

Why the Inclusion of Mathematics Language in the Appendices

Since the language of mathematics proved to be constantly similar in content and form, to save time and space, a short sample of each group's discussion is included in Appendix O. A glance at the transcription indicates the quantitative similarity of all the groups' language.

Resorting to Egocentric Speech

Vygotsky (1962) states one of the best ways to encourage egocentric speech from a child is to remove the adult from the scene when the child can no longer solve the problem (p. 137).

Mathematics was the subject area where the students made

constant requests for adult help (in this case the researcher). Examples of egocentric speech are as follows:

1) I don't know . . . beats me . . . ask them.
2) Oh no . . . no . . . okay . . . well just . . . damn.
3) I don't wanna' draw.
4) It lowers the brain, all this.
5) We're just joe averages.
6) This is a "dragie".
7) So here we are stuck with below forty-two again.
8) See, I did it . . . I did it the first way right . . . no you didn't.
9) Me, I'm trying to figure this out.
10) Let me see . . . umm . . . #1.
11) Kate is concentrating now so we have to be a little bit quiet.
    - Okay.
    - Have you got it Kate?
    - No, just about.
    - Okay, Kate has just about got it . . . okay . . . Kate is still studying this . . . Pam, do you think we'll get this?
    - Must be a hard question.
    - Pam, do you think we'll get question one
    - I think sooner or later we will.

    (The group in number 11 was the only group to solve the problem. Perhaps this indicates the

role of egocentric speech in making sense - even in mathematics.

Summary of Mathematics Sessions

The subject matter of mathematics tended to require a very quantitive use of language which was determined by the nature of mathematics. The students also needed to use egocentric speech.

Current Events

The Uniqueness of Student Language to Learn

The current events discussion had the greatest number of groups as well as the greatest number of sessions. The reason for the former situation is that at the time of the sessions all students were available, unlike social studies, science, poetry and mathematics where groups were attending French classes, drama groups or physical education classes. In addition, for poetry and mathematics only four tape-recorders were available. The greatest number of sessions were held in current events because these sessions were part of a project which served as a pilot for the four other subject area sessions.

The nature of the task was both very closed and open. There were definitional questions of a closed nature such as "What is strike" What is injustice? (see Appendices A to E). By using the question "What do you think?" on several of the tasks, it was intended to imply an open-ended response from

the students. As will be shown from passages of the students' language, the students generally took an open-ended approach to all sections of the task.

Of the five different sessions of subject area discussions, the sessions of current events not only seemed to provide the widest variety of language strategies to learn, but also the elaboration of ideas was the most extensive. The topics chosen for the tasks tended to be closer to the personal experience of the students, thus this may be the major reason for the extensive elaboration of students' language for learning.

As well, this extensive elaboration of ideas provided examples of the students' language showing shifts in thought from spontaneous concepts to scientific concepts. This shifting of thought back and forth from specific-concrete language to learn to abstract-generalized language to learn was evident in several sections of the groups' discussions.

Shifting Between Specific Content and Generalized Content

Vygotsky (1962) discusses how language and thought are used to weave everyday concepts (spontaneous with scientific concepts), (see Chapter 2, p.). In addition, he discusses how real conceptual development is achieved from elaboration of generalizations and also generalizing the generalizations of the earlier level (p. 114).

This shifting between the conceptual categories of spontaneous and scientific also produces a shifting of specifics and generalizations. What is a specific generalization in one case changes as a new level of generalization is created. Thus, a generalization of a generalization shifts the specific generalization to a new system of generalization for the language users.

As the students of group six in current events discuss the bus strike, there is evidence of shifting between specific-concrete everyday concepts and abstract, scientific (higher level) generalizations. This use of language to move in and out of meanings indicates a transformation of the meaning of both the scientific and the spontaneous concepts of the group members.

In the following, transcription of the students' language of the discussion will be marked with a capital S for spontaneous concepts and marked with a capital G for scientific concepts. These markings are used to demonstrate the shifting between the two categories of concepts within an individual members' language as well as the shifting between the members of the group.

The language of the passage demonstrates the shifting of <u>strategies</u> to weave in and out of the students' spontaneous and scientific use of concepts. This marking of strategies, as well as the conceptual category of spontaneous or scientific, exhibits the complexity of students' use of language to learn.

Student Language		Strategies and Categories
Liz:	Sally, what do think a strike is?	1) Liz <u>initiates</u> the discussion. (G)
Sally:	Okay. A strike is when people . . . okay. A strike is when people are very concerned about . . . something about their jobs . . . like just say it was like the same as if with the bus drivers . . . and ah . . . it's a . . . okay like they want . . . they want more pay and so they won't go back on work until their . . . until they actually do get higher pay . . . so um . . . what a strike is is when somebody . . . when people want something changed in	2) Sally gradually associates the <u>introduction</u> of the content: (G) a) as people concerned about jobs (S) b) more pay (S) c) staying off work (G) d) want changes in jobs (G) e) striker's demands and the consequences of their demands are not met Even the content here moves between spontaneous and scientific concepts.

their job, they won't work until um . . . until they . . . until they get what they want.

Liz: You mean like . . . um . . . you . . . you . . . you don't think that the work you're doing is getting enough money?

3) Liz asks for clarification from Sally while at the same time summarizing the content Sally introduced.

Sally: Right. Yeah. And if you belong to a union . . . like even if you're . . . you feel okay with your job . . . you might have a un . . . most people . . . most jobs do have a union and so they say to go on strike . . . so . . . that's just

4) Sally accepts Liz's summary as a shared meaning and (G) introduces the concept of unions.

5) Sally uses expressive language "it's our tough" indicating an awareness of power of the unions (G). The expressive use of

	the facts . . . I think what a strike is.	language here also allows Sally to explore human feelings and attitudes (S).
Luke:	You don't have to.	6) Luke <u>disagrees</u> with Sally's point that if unions <u>say</u> strike, you have to strike (S).
Sally:	Yes if you belong to a union . . . the union says go on strike . . . the union decides to go on strike . . . cause almost if you don't . . . they can take you to court there and they can sue you and everything.	7) Sally <u>reviews</u> her point about the power of unions. However, she moves to an even <u>higher</u> power to <u>support</u> her point - the court and its consequences (G).
Luke:	I'd just quit.	8) Luke draws the students' concept of striking (S) to a very <u>personal</u> level which now shifts the concept of strike in Sally's terms #5 to a more <u>general</u> concept than Luke's

concept of quitting than was at the point in #5 of Sally's (S).

Sally: Mmmm, yeh . . . hey you guys this thing.

Liz: Okay, mmm . . . Joan what do you think a strike is?

Joan: Well I think a strike is when you don't want to do something because somebody says "hey, we haven't been getting enough pay . . . ss . . . getting really . . . mmm. . . say somebody in Calgary goes on strike, when they're getting more money . . . and they got their way . . . they . . . they . . . are gonna go 'cause they're in Alberta

9) Joan shifts the concept of striking to a specific concept by framing the (S) concept in the context of what someone might actually say if they were going on strike (G). Joan elaborates the concept of strikes by (G) setting up a hypotheses. This enables the concept of strikes to go beyond the given information provided so far by Sally and Luke.

and we're gonna go on strike and we're gonna copy cat and . . . er . . . say "Well we'd be happy to get more money so . . . they go on strike.

Luke: I like Calgary. It's a wonderful city.

10) Luke evaluates and expresses feelings about Calgary which denotes attachment to the specific content of the city Liz hypothesizes about (S).

Sally: Okay that's um . . . inter . . . what's that word there?

(?): Where?

Sally: That's um . . . irrelevant. Yeah, irrelevant.

11) But Sally realizes Luke's personal point about Calgary is shifting the topic "irrelevant" to the discussion of strikes at this point.

Luke: It's your turn.

Luke: What's irrelevant?

Sally: Talking about Calgary when we're talking about strikes. Now go.

Liz: Okay Luke. Joan, you're saying . . . that . . . in Calgary that one union in Calgary goes on strike . . . and they get . . . you know . . . higher wages and everything . . . then Edmonton's going to copy them, so they can get higher wages?

12) Liz asks Joan for clarification of her points about strikes in Calgary (S) and by putting the question in a rhetorical form has tacitly summarized Joan's points. This is also accurate information about parity that the news media gave for the Edmonton bus strike (S).

Joan: No, they're not going to copy them. They're just going to say, "Well how come they, they're a smaller city, and they're getting more pay and they have less citi-

13) Joan monitors her own speech and thought by not passively accepting Liz's summary. Joan restates her concepts about strikes and is using the strategy of reflexivity (G). This

	zens and stuff than us so why can't we get more pay so they're gonna' go on strike.	learning strategy allows Joan to <u>reshape</u> and <u>re-apply</u> the knowledge of strikes.
Sally:	Well, that's not . . . that doesn't really concern striking . . . it's just concerned with their jobs . . . like . . . well, you know . . . and there's something they don't like with their job and they want it all fixed up and the people won't fix it up, they'll just go on strike until they do fix it up.	14) Sally <u>adds</u> the content that strikes are a dissatisfaction with the job, not just for money (S) and the workers go on strike until they do fix it up (G).
(?):	The teachers. . . .	
Liz:	Okay, um . . . Luke what do you think a strike is?	
Luke:	It's when ah . . .	15) Luke <u>repeats</u> the previous

	when they're asking for more money and . . . complaining 'cause they're not being treated right either. . . . I guess that's what it is . . . what do you think it is?	content of strikes as asking for money but <u>generalizes</u> Sally's point about job dissatisfaction by the words <u>complaining</u> and <u>poor treatment</u> (G).
(?):	Me . . . uh!	
(?):	Penny gets her	
Liz:	If the union decides, "Hey, we're doing all this stuff and they're not paying us, we should get what we deserve or [yeah] we work too long" or "We're teachers, we don't . . . we have too many students, you know we can't do that" . . . and so they're just. . . .	16) Liz uses <u>anecdotal</u> information here to <u>emphasize</u> the evidence presented so far (S). By quoting as an <u>imaginary</u> worker, Liz adds a sense of drama to the evidence that allows her to make sense of the actual reality of a worker and why he would strike. She also <u>gives additional content</u> by stating why teachers strike (S).

(?):	And in support of (unclear).		
(?):	They will teach more students if they get more pay or . . . . students	17) (G)	A statement about a teachers' strike is very general in the pay they will get.
Sally:	Yeah (laughs), $1.25, $25 a day. Okay so ah . . . k . . . number 2.	18)	Sally makes the generalized pay amount in #17 very specific by stating an exact amount (S).

Although the students' language shifted between specific and general, the levels of meaning also shifted. At one point, a concrete specific meaning switches to a generalization at a higher level because another student uses personal experience. As each student constructs the meaning of a strike, the concept of a strike undergoes a reshaping of the student's knowledge of strikes. Neither the spontaneous nor the scientific concepts remain in a fixed category but shift in levels of meaning as the content changes. The students used their language to externalize and to order their thoughts about the concept of a strike. With various social, cognitive and linguistic processes, the students work on their meaning of strikes. Their inconsistency in meaning indicates they are going through learning processes. Although they learn through elaboration of thought by using their language, the students indicate that for them, a strike

is not a fully developed or a fixed concept.

Group six continued to introduce spontaneous concepts to talk their way into the concept of a strike. The use of everyday experiences increased. Although the group continued to elaborate the strike concept using everyday evidence, this use of language enabled the group members to weace into higher level generalizations. The students discussed several points of view that typify the elaboration of an idea by the sequencing of everyday events. One student talked about her sister's problems of getting to the university. Another student used the example of her mother's difficulties because of the bus strike while another student talked about the teachers' and the senior citizens' problems in arriving at destinations.

In the example of student language that follows, Liz set up a hypothetical case after Sally generalized about her feelings of the bus drivers on strike. Liz's strategy may be an intuitive response to Sally's comment but Liz's language does show the others and herself that alternative points of view are possible. To provide the alternative point of view, Liz unconsciously moves the learning through the lived world of bus drivers, kids, wives, and Mrs. S, their teacher. Finally, the students are able to generalize their spontaneous notions to the lived world of lots of people who need to survive. (Underlining indicates the use of spontaneous concepts).

Liz: Whose side are you on?

Sally: The . . . ours . . . I don't like them . . . I don't like the, the bus drivers. I think it stinks.

Liz: Okay, let's put it . . . let's look at this point of view. Okay. Say . . . say you were working driving a bus . . . you know it was really noisy and you couldn't drive and ah . . . you had a family . . . [shutup] a family to take care of . . . you had a family to take over . . . take care of . . . and . . . and [turn in down] you don't have. . . .

Sally: Yeah . . . you're right ( ) in a way they do deserve more money but I mean . . . just like . . . why do they have to go on strike so that . . . in a way I am on the bus driver's side, then I'm on my side, like I do think the thing does stink but they do. . . .

(Luke and Sally briefly discuss what's irrelevant)

The discussion continues as follows:

Sally: I'm really on both sides . . . because . . . in a way . . . if I did have a family to support and everything.

Liz: They're both right.

(?): And my wife. They're both right in a way on the both sides. Okay.

Sally: Whose side are you on? Or Joan?

Liz: Joan, do you feel . . . well how do you feel about the strike?

Joan: Well, I'm on the bus driver's side because the bus drivers because if they . . . have children and they're not very keen on this but . . . they have to start working, they don't get very much pay, they want more pay to support the family . . . so the wife is gonna' have another baby . . . and it turns out to be triplets or something stupid like that. Well, they're not gonna' have enough money to support these kids, so what they'll have to do is . . . give them up for adoption . . . but you can't get a nanny when they're out working because . . . nannies cost money . . . and they don't have it, 'cause it is going to cost more money to get a nanny anyway so. . . .

Liz: Besides, the people who are affected . . . quite a lot of people and . . . and ah . . . it's not wonderful (unclear).

(?): Well, a lot of kids have to go to school and depend . . . depend on the buses.

(?): Like you do.

(?): Like I do. . . . I have to take a bus to school . . . it's a fairly long walk and . . . lots of people need to depend on it.

(?): And car pools like Mrs. S.....

(?): You can't hear when I kick her in the rear end.

(?): Yes you can.

(?): It's effecting a lot of people.

(?): Yeah, it is and it's not the greatest thing in the world but people do need to survive, and . . . support their families and things.

The previous passage was typical of the students' use of language to learn. The elaboration and moves to higher level processes of thought and language are common in the transcriptions of student language in the sessions on current events. Given an opportunity to control their knowledge and language, the students were capable of controlling their learning. There were very limited incidents of tomfoolery and few requests for adult intervention.

The Use of Expressive Language

Relieved of teacher control of their language, the students used expressive language to make sense of several aspects of the current events tasks. Unlike the other subject area sessions, current events had no predetermined expectations of language use. The students appeared relaxed enough and close enough to the subject content to use expressive speech to make sense of the tasks in current events.

The objective use of language to learn is prevalent, as research tends to indicate, in most subject areas. By Grade

5, it is supposed that the students have an implicit knowledge of the formal expectations of the language of social studies, science, etc. However, since current events is not a regular curriculum subject, the expectations of language used by students should remain open. And in current events, the language of expressive speech is common.

Expressive speech is personal, close to the speaker but serves a function important to learning. It is often difficult for an eleven-year-old student to explore concepts at too abstract a level. In addition, to make connections between scientific generalizations and personal experiences or action knowledge, students need to use language that helps to make these connections. Also, as Britton suggests that it is in expressive speech that we are likely to rehearse the growing points of our formulation and analysis of experience. Expressive speech is also a principal means of exchanging opinions, attitudes and beliefs.

In the other four subject areas considered in this study, there were only occasional snippets of expressive language and in some cases, no use of expressive language. In the passage that follows, Sally made extensive use of expressive speech to evaluate and explore at a level of concreteness which demonstrates the power of expressive speech.

(The underlined words indicate expressive speech).

Liz: What do . . . how do you feel about the bus strike?

Sally: I think <u>it stinks</u> and the leaders of the union

are just a bunch of old mental midgets trying to go on strike . . . I mean . . . the pay's crumby but who cares, you know, better than nothing . . . and if they have a . . . mother who's well educated at home, feeding her little kids . . . for about three or four little brats who don't even toilet trained yet . . . she should get a nanny or whatever . . . and she could go work or whatever 'cause I think the people who ah . . . organize the union are mental midgets acting like turkeys.

In another example, expressive speech is used to correct a misinterpretation of information. The intensity of expressive speech is revealed moreso through intonation with accompanying gestures impossible to demonstrate in written speech. When Andy talks about his friends in Calgary who want to take a bus ride but cannot because of the bus strike, Donna and Paul react intensely with expressive language.

Donna: Tragic that.

Paul: Calgary! . . . where's your brain?

Andy: I didn't say that.

Paul: Well transit's on strike, not Greyhound.

Andy: So they can't get to Calgary because of the bus strike.

Paul: Greyhound's not on strike.

Andy: Boy, who'd use the Greyhound just for a couple

of hours drive? Not me.

Paul: ( ).

Andy: Okay. Forget what I said. . . .

Donna and Paul's use of expressive speech suggest to Andy his point is incorrect. Andy very quickly told his group "to forget what I said". Andy soon learned that his point about Calgary presented conflict for other group members.

When humans indwell or empathize with other people's lived world, expressive speech is a strategy that the students used to indicate a commitment and a deeper understanding of the realities of strikes. At the same time the students used expressive speech to indwell in the meanings of other worlds, they learned cognitive and evaluative information that take the students beyond the world of their previous factual knowledge about strikes. Group four in current events made use of expressive speech to learn and empathize. Excerpts are removed from the total discussion and are intended to exemplify the different changes in the students' previous knowledge and the indwelling that indicates evaluative concerns for the issue. Again, the underlying parts indicate expressive speech.

Claude: Is this thing rolling?

Sunny: What is a strike?

(?): Well, let's see.

Claude: Well. . . .

Shel: Well, a strike is, when a bunch of twits leave their job to make idiots of themselves . . . in other words they want more money.

Sunny: Well, if you were . . . if . . . what do you think a strike is?

(teacher interupts)

Claude: Well, I think it's when, when . . . a whole bunch of people who think they're strong . . . carrying picket signs . . . even out in cold weather and burning their . . . not burning, freezing their long underwear and all sorts of junk like that.

Shel: It's depressing.

Claude: Yeah.

Sunny: Well you mean that it's like when a bunch of idiots who are really wacko . . . who are really wh . . . who are really wacko ah. . . .

Claude: Yeah go on.

Sunny: When a bunch . . . of idiots you think . . . when a bunch of people say that . . . like. . . .

Claude: The buses in Calgary they . . . they felt that you know . . . they . . . they're getting ah . . . I think . . . oh twelve . . . they're getting twenty-five cents more and they . . . they want . . . .

Sunny: Twenty-five cents?

Claude: They want twenty-five cents more.

Sunny: Ah . . . what ya' mean like . . . okay, say that you're the bus driver . . . k . . . and say that your best buddy . . . ah . . . is paid twenty-five dollars . . . twenty-five. . . .

Claude: Cents.

Sunny: Twenty-five bucks an hour.

Claude: Cow . . . holy cow.

Sunny: And. . . .

Claude: And you're paid. . . .

Sunny: You're paid . . . ah . . . fifteen bucks an hour . . . no. . . .

Sunny: (Laughs) don't ask me!

Shel: Recognition!

Sunny: That's right . . . I can never say it right. . . see . . . so you think . . . so you think that what we should do is we should just . . . um . . . say "Okay, ignore them, leave it up to the government, government got it all started so. . . . ."

Shel: Ignore them.

Claude: No! They gotta' get on their own.

Sunny: Okay, okay. Leave it up to them, we don't care about it . . . uh . . . just. . . .

Claude: But we do too. . . .

Shel: Okay.

Sunny: Well, we do too, but don't you think that. . . .

Shel: Okay, I think . . . you better . . . enough

schemes for today.

Sunny: Don't you think . . . but don't you think that . . . it concerns them . . . but don't you think that it concerns them because . . . ah . . . .

Shel: Can somebody else get a word in?

Sunny: Sh . . . don't you think that it concerns them because for every dollar, every dollar that they (unclear) goes towards their family and when the interest rates and all that junk nowadays about every dollar that you earn about three-quarters of it goes towards the government.

Claude: Daaaa.

Sunny: Stupid old government that is. . . .

Shel: I know.

Sunny and the others used expressive speech extensively to take ownership of the meanings and feelings of the bus strike.

Narrative as a Way of Learning

In the course of everyday events, people use narrative to interpret events that have occurred in the past. Moffett (1967), Britton (1970) and Labov (1972) each see narrative as one aspect of using language to learn. To Britton, narrative is important in that:

> To recount an event is to place a construction upon experience, to interpret it: but of course, we interpret

> also more directly, explaining experience, commenting, bringing generalizations to bear upon it (p. 72).

Students who try to make sense of familiar and unfamiliar experiences use narrative to order those experiences. Narrative is one method of recapitulating past experience by matching a verbal sequence of events to something that actually happened. At times this recounting of past events helps the learner to interpret the situation of the present and move onto new understandings. Narrative is a moving away from accounts of particular events towards generalizations upon events.

The current events sessions were the only area where students used narrative to make sense of experiences. The everyday familiarity of the concepts of injustice and strikes needed to be interpreted in light of new information from other students, other resources (media, parents, etc.) and from the nature of the task itself. In this study, two types of narrative appeared which seemed to help the students make sense of the realities which they were discussing.

The Use of Personal Narrative

The first type of narrative that was used by the students to learn is of the form described by Britton (1970), Moffett (1967) and Labov (1972). Donna, in the following example of narrative, is telling the story of her cousin. Donna's group had reached a quick consensus that the bus strike was unfair. To elaborate the concept of the unfairness of the bus strike, Donna's use of narrative directed the group's

consensus to further details. Within the sequence of events, Donna does indicate the point of her narrative and prevent the question of so what? from other group members and herself. Labov's analysis of narrative showed the use of evaluation in narrative prevents others from asking "so what?" of the storyteller. Evaluation also indicates the reason for telling the narrative. As part of her narrative, Donna included an evaluation of her cousin's situation, "it's not really fair for him." Donna's evaluation strategy also added support to the unfairness of the bus strike. Donna's narrative lead the other group members to ask additional questions. Paul asked Donna questions about her cousin's location and in so doing Paul extended Donna's narrative. Paul's questions brought forward from Donna the actual distance of her cousin's school from home. Paul appeared to want evidence that Donna's cousin was really done an injustice because of the bus strike.

Donna: My cousin couldn't get to school 'cause of the bus strike.

Paul: Lucky cousin.

Donna: And he couldn't get to my place . . . actually he's smart . . . and I was gonna' . . . actually and I didn't want him to take a ( ) just . . . he's gonna be in lots of trouble ( ). His dad was at work and his mom was (cooking) and she doesn't know how to drive yet. Well, she doesn't wanna' know how either so . . . um

it's not really fair for him so he couldn't . . . and my mom wasn't about to . . . get up . . . get her coat on . . . get outside in the cold air . . . turn on the truck . . . wait for it to warm up . . . go over there for a half hour . . . so . . . decided not to ( ). That's all!

Paul: How far away does he live from his school?

Donna: From his school?

Paul: Yeah.

Donna: Don't ask me. I don't know. He lives over where I used to live.

Paul: Millwoods?

Donna: No.

Paul: Where?

Donna: Well . . . how an I to know . . . I don't know what school he goes to.

Paul: Dunhard? Dunhard?

Donna: Well, he never even told me.

Although the definition and structure of narrative assume a sequencing of past events, the deep structure of a narrative can create a complexity of learning strategies. The narrative language that the students used in the current events demonstrated that the sequencing of events is secondary to the use of language to learn. Maggie, in the ensuing passage, used narrative to talk in and out of the understanding of a consequence of bus strikes.

The next example of narrative is discussed following the sample of the students' language.

Gord: Most people have the wrong image about his . . . hitchhikers but . . . just think about the innocent hitchhikers that . . . that are just trying to get to work without, without a bus . . . to get to work.

Pam: Okay . . . ammm, I think . . . like Gord was saying about these innocent hitchhikers . . . well if one person has gotten raped then what about the easy . . . innocent . . . what about the innocent people like the innocent drivers and the innocent hitchhikers. Well, they don't trust anymore people . . . so they don't hitchhike.

Kate: What is this world coming to?

Maggie: But . . . but okay like Hmmmm we're driving in the car one day . . . and there were these people . . . hmmm, I think . . . they hadn't . . . they're from Mexico or something . . . and they . . . they were looking for their kids . . . school and I don't . . . they didn't know how to get around and everything . . . so . . . my dad . . . we picked them up and we dropped them off at the school . . . and then my dad was on his way to work . . . and um . . . and he saw this old lady there . . . and so he

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picked her up and drove her where they are because . . . just people aren't really messier because they don't trust hitchhikers . . . like if . . . you've heard on the radio . . . .

Pam: And other people . . . the hitchhikers don't trust the drivers either.

Maggie: Yeah, but . . . mostly the drivers don't tru . . . don't trust the . . . the hitchhikers because most of them are . . . the drivers always get killed or something. . . .

Pam: Like my mom . . . my mom wouldn't pick up a man . . . alone but if you were with someone else. . . .

Maggie: Like a woman . . . a married woman.

Pam: I can . . . I can understand a full car not picking up anybody . . . but a one person car. . . . A ONE PERSON CAR. I CAN'T BELIEVE IT!

Gord introduced the image of hitchhikers evolving from the previous content on problems caused by the bus strike. Pam moved from the specific account of getting raped to the general account of two points of view - innocent hitchhikers and innocent drivers to an analogic low level of generalization - "Well, they don't trust anymore people". Kate moved the discussion almost to a speculative level with her question based on the general facts of bus strikes,

innocent people, rapes, distrust of people. With all these problems in the life of the people affected by bus strikes, Kate wondered "What is the world coming to?"

Maggie, from the previous constructions of thought by her fellow group members, moved into the narrative level of making sense. But her narrative was not merely a sequencing of past events. While sequencing events, Maggie interpreted the world of one ethnic hitchhiker, the search for a place, and the pick-up of another hitchhiker (an old hitchhiker at that). These internal interpretations lead Maggie to the reason for her use of narrative. She implicitly constructed a generalization from the sequenced interpretations of events - "people aren't really messier because they don't trust hitchhikers." From Maggie's narrative the group shifted from general (hitchhikers don't trust drivers) to particulars (my mom). Pam's final comment was a discovery of truth about the interpretations of hitchhiking. Pam's use of expressive language indicated the way she felt about her interpretations of the world of strikes.

A ONE PERSON CAR
I CAN'T BELIEVE IT!

The Use of Impersonal Narrative

The first type of narrative was a functional use of language to learn. It is inferred that functional narrative is a sequence of events that actually occurred in the lives of the students. However, from the current events sessions, a second type of narrative was used as a learning strategy

by the students. Impersonal narrative will be the category for this second type of narrative because of the fictional aspect of the events.

The students used impersonal narrative to recount a strike scene at a brewery, and to recount the dialogue of a government party threatening strikers. One of the most dramatic uses of impersonal narratives was presented by group four.

Group four was responding to how they felt about the bus strike as fair or unfair. As with many of the groups, the realities, the problems and the solutions of bus strikes arose from the students' explorations with their language. The issues that developed from the students' discussion became intense and frightening. The students talked about the dangers of hitchhiking with consequences of rape, robbery and murder. The creation of the impersonal element allowed the students to filter the experiences. In other words, the use of impersonal narrative, allowed the students to make sense of the possible horrors of hitchhiking, enter into the feelings of both drivers and hitchhikers, and recount a possible reality. The impersonal aspect of the narrative created a feather line between fantasy and reality, as well, the students could learn about sensitive issues without fear of them actually occurring, especially to them.

Sunny: Ah . . . I'll tell something which I felt . . . no . . . when I was walking to school one day . . . you know the bus strike . . . stop down

there . . . well I. . . .

Claude: I hate your stories.

Sunny: Shh . . . no, but listen . . . okay tell me what you think of this . . . I saw a lady . . . with two little kids (Claude blows tongue at her), I mean just little babies . . . you know . . . and she was standing out there and it was freezing cold out there and she was trying to hitch a ride. . . .

Claude: Hitchhiking?

Shel: With three babies?

Sunny: She had no choice.

Shel: With three babies?

Sunny: Two . . . two. . . .

Shel: Well . . . well they would have went wild in the car and the poor . . . driver by the nose . . . .

Claude: And pulled his hair out and then got kidnapped.

Sunny: Ah . . . what do you mean?

Claude: And maybe even killed. . . .

Sunny: Well, what I think . . . what I feel. . . .

Shel: I think she should listen to the radio. . . .

Claude: I think hitchhiking is for the birds.

Sunny: (Laughs).

Claude: 'cause it's dangerous . . . you see . . . 'cause. . . .

Sunny: (unclear), (laughing).

Claude: Okay, okay, just shut up for a sec. . . . just shut up for a sec.

Sunny: What I feel about the bus strike is that it's a really lousy thing. . . .

Claude: Shut up! (shouts loudly).

Sunny: . . . and what every one of them needs is a good beep, beep . . . and a slap across the face.

Claude: Good kick in the back end? (laughs).

Sunny: And a lot of other things.

Claude: Okay, okay. Listen to this, "Don't worry children we'll get a ride soon waaa, waaa, waaa" "voom", waaa, waaa . . . want a ride lady? Yeh, please, waaa, waaa, waaa, waaa, waaa. . . .

Sunny: Oh mister! (cries).

Claude: Pow . . . killed . . . see they're all killed . . . they're dead . . . see and then. . . .

Sunny: Well . . . well what could you expect if the bloody kid went like that . . . (cries like a baby).

Claude: They blame . . . they blame. . . .

Sunny: And started beating up the poor guy and tearing his car apart (laughs), well, just suppose. . . .

Claude: And then they blame that guy for killing them.

Sunny: Well, I would blame then, well just suppose. . . .

Shel: There's this sexy girl on the side of the road

in . . . a sort of . . . bikini. . . .

Sunny: That would really turn Sean on.

Shel: No . . . then the guy stops . . . and then the guy stops and. . . .

Claude: And rapes her.

Sunny: Goes whirly-twirly.

Shel: No . . . he takes her in the car and says, "hey kid, do you want a ride?" So he gives her a ride and then she. . . .

Sunny: She pulls a knife.

Shel: And starts fire and he rapes her and a long time.

Claude: It won't take a long time to rape her 'cause all you have to do is cut the little straps and then. . . .

Sunny: Woo pee.

Claude: And then . . . I bet I know.

The students of group four attempted to organize their thoughts about the possible horrors of hitchhiking as a consequence of the bus strike. The image of good and bad shifted between the driver and the lady. There was not a clear distinction between hero and villain as in most myths. However, since four group members were involved in the narrative, there was not a black and white indication of character and action since the members were not sure of who is a hero or villain, a driver or a hitchhiker.

The Language of Comparing and Contrasting

> Our own experimental studies suggest that the child becomes aware of differences earlier than of likenesses not because differences lead to malfunctions, but because awareness of similarity requires a more advanced structure of generalization and conceptualization than awareness of dissimilarity (Vygotsky, 1962, p. 88).

A pattern that emerged in the current events discussions was the use of comparing and contrasting the worlds of different jobs. The above quote of Vygotsky suggests that, in conceptualizing, it is differences that require lower level generalizations compared to the higher level generalizations of using similarities to make connections in concepts. In this study, Vygotsky's findings tend to be in accord.

Only one group compared two jobs similar in nature. The reason for comparing two similar jobs was to emphasize the pay differences between doctors and nurses. However, the argument was decidedly in favor of the nurses. The argument gained support, not so much because of the similarities of doctors and nurses' jobs, but moreso because Marty used his language to create an image of doctors that is unsuitable for a profession. Perhaps the difficulty of seeing the similar world of doctors and nurses encouraged Marty to resort to his strategy of using hypothetical evidence that doctors run around with a beer all day.

Flin: Well . . . there was . . . the nurses; strike is really getting to people and I think they

should do something about it.

(?): I nearly had a friend that died.

Flin: Yeah . . . people can die . . . especially, babies . . . they have . . . a disease or something . . . what can we do without nurses . . . I say bring 'em back . . . pay more.

Abbie: 'cause I think, the doctors can't really. . . .

Flin: Pay more.

Marty: Do it all by theirselves, they gotta' have something to do it with.

Flin: The doctors get enough money from the people. What do nurses get? Nothing. . . . They get . . . they hardly get anything.

Marty: They get an . . . you know.

Abbie: Nurses do most of the tests and the doctors do all the operating or whatever and. . . .

Marty: Run around with a big bottle of beer in their hands.

Flin: The nurses . . . they should get paid more.

Marty: Why?

Abbie: Yeah, I think so too.

Sharon: More than the doctors.

Marty: No, not more than a doctor.

Flin: Well, I think, they should act now and pay the nurses so they can work.

Marty: Me too!

The group can only generalize to the level of Marty's

image as a reason for ending the nurses' strike. Flin moves the group to other strikes instead of staying with the world of doctors and nurses.

Flin: Okay . . . is there anything other. Any other strikes besides the teachers' strike, the bus strike, and the nurses' strike?

Except for the above examples, all groups chose to contrast two different areas of jobs. Some contrasts were as follows:

1) Bus drivers vs. brewery workers.

2) Nurses vs. teachers.

3) Bus strike vs. telephone strike.

4) Bus strike vs. Inco strike in Sudbury.

One group used contrasting strikes effectively to construct an understanding of government power to control workers. The introduction of a contrasting strike also lead the group to summarize the points about power and money to a pseudo-concept of "take it or leave it". In Vygotsky's development of higher level processes, the pseudo-concept level groups attributes in an either/or manner. The appearance of the pseudo-concept is the link between complex thinking and fully-formed concepts. However, in the passage to follow, Claude's language indicated he did not make a synthesized generalization about power and money, but an either/or generalized statement.

Claude: It's just the people that the people in Calgary are getting paid twenty-five cents more than the

people in Edmonton.

Sunny: So?

Claude: And . . . they're getting mad.

Sunny: (laughs) . . . I know what you were going to say. Just gather around those guys and just keep on . . . Well, do you think that if these guys . . . if they were simply . . . okay, the guys that . . . okay you guys, you're gonna' get paid twenty-five cents more.

Claude: No, but it's not that simple.

Sunny: Well, don't you think that if the guy said "okay" and tossed a bunch of quarters at them, "okay, here's your twenty-five cents more, you can get back to work". Or do you think it would be better if the government came along and said, "Okay guys, listen . . . you take the deal which we're giving you, otherwise we're kicking you all out and you're all fired. Got it?"

Shel: I'll be kicked out.

Claude: But they're quitting.

Sunny: Yeah, but you see . . . in the . . . when they have that ah . . . air strike . . . the plane strike. . . .

Claude: The what?

Sunny: The plane strike, you know.

Shel: Is that the controllers do-do?

Sunny: Well no, the people in the airplanes were

striking too. 'Member when they had that . . . 'member what the government said?

Shel: Yeah. . . .

Sunny: He said . . . he said, "Okay all of you do . . . ."

Shel: "Take it or leave it."

Sunny: All of you do.

Claude: In other words. . . .

Sunny: "If you don't take what we're giving you, then you can just take a hike and we'll just get new people on . . . you're all fired."

Shel: I know . . . I mean

Claude: It's like you say . . . it's like you're saying . . . "you have two choices, take it or leave it."

Shel: And in the end they got less money anyway.

Sunny: Yeah, well they got less money but they . . . but they were treated better. They were given a lot more recognition.

Claude: Recogn . . . what?

Shel introduced the idea of the take it or leave it alternative, however it was Claude's use of language that indicated he was able to synthesize "the two choices". Vygotsky's theory indicates that Claude is learning since Claude was capable of employing his language to abstract at an advanced level of complex thinking. That Claude has used his language effectively to learn is supported by Vygotsky's

statement that:

> Only the mastery of abstraction, combined with advanced complex thinking, enables the child to progress to the formation of genuine concepts. A concept emerges only when the abstracted traits are synthesized anew and the resulting abstract synthesis becomes the main instrument of thought (p. 78).

Group five of the current events session chose to contrast the differences between the life of a nurse and the life of a supermarket cashier. The entire transcription of group five's discussion is found in Appendix N. The entire tape is included to show the sincerity, the attempted interpretations, the elaborations, the clarifications, the questioning, the conflicts, the evidence and the use of language to learn that the students brought to the task. This transcription is typical of how the groups of students discussed differences in realities to attempt a clearer understanding of a high level concept such as A Strike.

Summary of Current Events Sessions

Compared to the other subject areas of this study, there appeared to be more personal involvement on the part of the students. To learn about the information and issues of current events, the students used expressive language and narrative. Different theories suggests these modes of language are an indication of personal empathy between the subject and the subject matter.

The students also used their language to shift between specific and general abstractions indicating an actual

development towards higher level thought processes.

Perhaps the lack of pre-determined expectations about the use of language to learn in current events prompted the extensive elaboration and development of higher levels of thought. Unlike other subject areas of this study, perhaps the students were not as limited in their thinking because of subject terminology or the expectations of language use brought to the task.

Chapter 5

SUMMARY, CONCLUSIONS AND IMPLICATIONS

This chapter is organized as follows:

Summary of the Exploratory Study - This section will summarize the findings relevant to the research questions being asked.

Conclusions from Explorations of Student Language - This section will draw conclusions on the findings based on theoretical positions and research findings.

Implications for Knowledge and Control in Classrooms - This section will discuss the implications of a shift from the teacher-dominated use of language in classrooms to an increase in quantity and quality of students' use of language to learn.

Suggestions for Further Research - This section will offer some possibilities for future research into language and learning.

A Concluding Statement will end Chapter 5.

Summary of the Exploratory Study

Question #1

What language strategies do the students use that indicate they are organizing their thoughts in order to learn?

Social Studies - The students used their language to

attempt an understanding of the economic, social and historical information of the early fur trade in Canada. Although the terminology and concepts were removed from the students' conceptual understandings of the fur trade, the students used cognitive, social and linguistic strategies to put some order to their thoughts on the fur trade economy. The strategies included elaboration of one's ideas, questioning meanings of others, asking for clarification, introducing other information, generalizations and the shifting of strategies. The analysis of one student's reworking of a major idea indicated how a student is capable of analyzing a concept with the help of other concepts.

Science - The students described the parts and purposes of a twig. Their language indicated they needed to make extensive use of similes as a language to describe. It was also found that the students made limited use of science terminology although they had supposedly learned the terms in regular classroom science lessons. In organizing the form of the students' language it was found that, in science, students may use a poetic form of language.

Poetry - The nature of the poetry implicitly controlled the strategies used by the students. One poem presented images of splits in personalities, in daily life, and living in general. The students used their language to make sense of the poem's images. The students talked in opposites about the poem; mad-sad, sad-calm; surface feelings-deeper feelings and many other opposites, especially the split

personality idea. Students tended to have interpretations for the poems but appeared to have limited experiential or linguistic resources to externalize the interpretations.

Mathematics - There was a very limited discussion in Chapter 4 of the students' language in mathematics. Since the language strategies the students used were as objectively representative as the nature of mathematics, the use of language to learn in mathematics was repetitive. These repetitive surface structures of language did not necessarily indicate a lack in underlying complex manipulation of mathematical operations. The students used the objective language of mathematics in an attempt to solve the problems. Only one group was successful in reaching a correct solution to one of the problems which all the groups discussed.

Current Events - The sessions in current events created the widest variety of language strategies. The students used narrative language and expressive language extensively to make sense of issues in current events. This use of narrative and expressive language suggested that, from a theoretical standpoint, the students were in greater possession or control of the knowledge in current events than they were in other subject areas.

Question #2

What is the content of student language that indicates the students are learning?

Social Studies - The students discussed a variety of

topics. If the different content were to be taken out of context it might appear irrelevant to the task. However, the students talked about

1) trapping of furs
2) trapping licenses
3) fish and caviar
4) overpopulation
5) British rule
6) synthetic furs
7) extinction of animals
8) cruelty of trapping.

The content of the social studies sessions tended to be oriented to present-day examples. However, the use of present-day content put in the total context of the discussion, showed that the students' introduction of certain content was totally relevant to organizing their thoughts about the fur trade in the past.

Science - The students concentrated on describing the parts and purposes of plants. The content was directly related to the task. However, by the use of similes, the students' language created a content of concrete images that helped the students shape their understanding of the concrete materials before them.

Poetry - The students introduced personal experience, concrete examples and T.V. programs as content to understanding of poetry.

Mathematics - The students introduced several

combinations of mathematical operations as the content to attempt a solution to the problems presented.

Current Events - The major content of the current events was realities in other worlds that contrasted with the world of bus strikes, nurses' strikes and injustice. The introduction of teachers' strikes, telephone strikes, bus strikes in other cities, the world of cashiers, family experiences, university students, senior citizens and hitch-hikers helped to clarify this current events task. This contrasting of ideas seemed to allow generalizations of one world and generalizations about the other world. In turn, the content of the two generalized worlds built a web of meanings and created new generalizations about the students' original thoughts on strikes and injustice.

Question #3

How do students use their language to make sense of the technical language of school subjects?

Social Studies - One of the major ways students made sense of the technical language of social studies was to bring other concepts to the tasks. The students had difficulty in defining the terminology of the tasks in elaborated terms. However, without using the actual term, such as cost of production, rising costs, monopoly, etc., the students created whole ideas to define the specific term.

Science - In science, the students transferred limited terminology of the regular science lessons in which they were

involved prior to and during the sessions of this study. Only the terms pistol and sepal were used briefly to describe the parts of a plant. Carbon dioxide and oxygen were used to explain the purposes of the different parts of the plant. Transferring subject specific terminology to an actual situation proved difficult for the students. The example of "bud" was discussed as an example of how, in spite of using the specific term bud, the students, when faced with the actual example, were not quite sure what the term referred to.

Poetry - Poetry was not considered to have any technical language except for literary devices implicit to the nature of poetry. In this study students were not faced explicitly with the technical devices of poetry.

Mathematics - In mathematics, the students occasionally used the terminology of the operations separated from the actual operation. A student occasionally would say, for example, "We have to multiply". However, the most use of technical language was within the form of the operation itself. For example, "Okay four times three equals twelve".

Current Events - In current events the students, in most cases, introduced the concepts of specific terminology but not the specific terminology itself. One example was in the discussion of possible definitions of strikes. The students introduced the concepts of unions, back-to-work legislation, unsuitable working conditions, the alternatives to striking, injustice and other ideas. However, the students did

discuss the concepts of strikes without the use of technical terminology.

Question #4

What happens when students can no longer make sense of what it is they are attempting to understand?

Social Studies - Current Events - In two of the five curriculum areas of this study, the students seemed to shift strategies and content in order to accommodate individual and group difficulties in comprehension. Social studies, and current events seemed to demand the most variety and complexity in the students' use of language to shape and reshape their thoughts. The availability of personal experiences and linguistic resources seemed to provide enough ideas for the students to manipulate in the organization of concepts.

Science - Poetry - When a student had difficulty in science or poetry she seemed to shift to other members, state the difficulty, or shift to other questions or content.

Mathematics - Mathematics proved to be the area where the students called upon the adult more frequently than in the other four areas of this study. Perhaps the "right or wrong" nature of mathematics increased the students' need for an adult to fill the gaps created by the students' difficulty to complete the task. There was evidence of egocentric speech which in Vygotsky's (1962) terms, is an indication of difficulty in understanding. Also, the limited strategies in mathematics available to the students, perhaps made the

solutions to the problems difficult to obtain using the students' language.

Question #5

How does the nature of the task effect the nature of the language used for learning?

Social Studies - Current Events - A speculation about the nature of the task effecting the nature of the language in social studies and current events is that the human elements of the subject matter allowed more personal, empathetic input. This empathetic understanding allowed the students a more personal use of language and in turn, more available strategies and content.

Science - The concrete nature of the task in science seemed to limit the variety of language uses. The very fact the students had the concrete examples with which to work, limited the explicitness of the students' language. The lack of explicit demands on the students' language created an implicit ordering of their thoughts in science. The use of similes produced vague images of comparisons. The lack of explicitness in the descriptions of concrete materials was matched by the students' limited-to-nil use of scientific terminology.

Poetry - The nature of the task in poetry seemed to demand language use inhibited by the imagery created in the poetry. A reverse phenomenon to the language used in science occurred. The concrete nature of the task seemed to demand the nature of linguistic imagery to order the students'

thoughts in science. However, in poetry, the nature of imagery in the task seemed to demand the concrete nature of students' language in order to interpret the poems.

Mathematics - The objective nature of mathematics produced an objective use of language by the students. However, when the objective demands of the task were difficult to solve, the students sometimes reverted to the subjective nature of egocentric speech.

Conclusions from Explorations of Student Language

The small sample of this study will necessitate caution in generalizing or extrapolating from the results since the study is limited to one classroom of twenty-eight students of mixed abilities and backgrounds.

In this study the grade five students:

1) were capable of using a variety of social and cognitive strategies in order to make sense of the demands in social studies, science, poetry, mathematics and current events,
2) used processes of thought that shifted between syncratic thinking, thinking in complexes and thinking in pseudo-concepts,
3) brought to the tasks a wealth of experiential, linguistic and previous conceptual knowledge that can be used to make sense of formal school knowledge,
4) given the opportunity to use their own language,

without the demands of teachers' expectations and the using of subject terminology, were capable of organizing their thoughts in several subjects across the school curriculum,

5) appeared to have an intuitive knowledge of pre-determined expectations about what language to use and is acceptable in specific subjects,

6) did have a need of an adult as a potential resource for developing higher levels of thought.

Implications for Knowledge and Control in Classrooms

Research into students' use of language to learn in teacher-directed classroom settings tended to present a rather dismal picture. However, it appears from this study that students probably are capable of using their own language to learn. In addition, what appears in the surface structure as vague and chaotic student language is actually a complex and sophisticated use of language to learn. Even the use of informal language and spontaneous knowledge is necessary to the student's organization of scientific school knowledge.

Without the control of an adult the students were able to use their language to explore the meanings of different school curriculum tasks. It appears that the students are capable of introducing new content, directly relevant to the task, although on the surface and out of context the content appears to be off topic. In a regular classroom interaction

where the teacher is in control of both the content and strategies for learning, there might not be the elaboration nor the introduction of a variety of contents and language strategies by students. Vygotsky (1962) states the importance of the child's use of language as follows:

> the child, freed from the directing influences of familiar words, was able to develop [word] meanings and form complexes according to his own preferences. Only through the experiment can we gauge the kind and extent of his spontaneous activity in mastering the language of adults. The child's own activity in forming generalizations is by no means quenched, though it is usually hidden from view and driven into complicated channels by the influences of adult speech.
>
> The language of the environment, with its stable, permanent meanings, points the way that the child's generalizations will take. But, constrained, as it is, the child's thinking proceeds along this preordained path in the manner peculiar to his level of intellectual development. The adult cannot pass on to the child his mode of thinking. He merely supplies the ready-made meaning of a word, around which the child forms a complex (pp. 67-68).

Therefore, the 'quiet' teacher-dominated language pattern of interaction should have to change. A student should be able to use her language to explore and discover new meanings as well as reconstruct the old understandings. From this exploratory study, generalizations can not be made about the need and the power of students to use their language to learn. However, from the findings of this study there are indications that students are capable of, as well as in need of, exploratory talk across several curriculum subjects.

A scientist and philosopher, Michael Polanyi (Polyani and Porsch, 1975) supports the necessity of expanding our use of language to expand our thoughts. He refers to expanding our

thoughts as "articulation" in the following:

> Language offers of course, the obvious advantage of verbal communication. We profit by information received at second hand, and more particularly by the communications of the dead, transmitted cumulatively. But ARTICULATION does not merely make us better informed: it enriches us even more by increasing our mental power over any given piece of information. Maps, graphs, books, formula offer wonderful opportunities for reorganizing our knowledge from even new points of view. This reorganization is itself, as a rule, a racit performance, similar to that by which we gain intellectual control over our surroundings at the pre-verbal level and akin therefore also to the process of creative reorganization by which new discoveries are made (p. 24).

Besides the transcending power of language, the students needed to engage in exploratory talk in order to indicate what knowledge and control of their thoughts they can possess. The students of this study demonstrated that language helped them to transcend as well as order their thoughts. The use of the informal language of narrative, expressive language and spontaneous concepts was necessary for the students to learn. In regular classrooms, the research tends to suggest the teachers work on the assumption that the students' use of language and knowledge must be controlled by an adult. This teacher control may lead to limiting students' intellectual growth. In addition, linguistic conformity expected of students in teacher-dominated classrooms may lead to limited or inaccurate information by an adult. This limited information, because of the demands of teacher expectations and conformity to curriculum, does not encourage the <u>actual</u> processes of student thought to emerge. Without the knowledge of the <u>actual</u> zone of thought cannot teachers

provide instruction in the zone of proximal development developed by Vygotsky (1978). To develop higher psychological processes, the students needed to use language, organize and reorganize their thoughts in different subject areas. In their exploratory talking, the students were able to "thought-journey" without the demands of one-word answers, teacher-controlled questioning and giving correct answers only.

The theory and practice of classroom language that allows the higher psychological process of abstraction to occur, or at least expand, is the theory and practice that educators should attempt to encompass.

This is not to suggest that the teacher role is to be ignored or even eliminated. Higher psychological processes of thought evolve from primitive thinking in a social-historical world. Therefore, the role of the teacher shifts when students are encouraged to use their own language to learn. As Dixon (1967) states:

> a teacher can help by noticing and reinforcing a potential change in the level or direction of the discussion, summing up an attitude perhaps, making an issue quite explicit or calling for an instance when generalizing seems to have lost touch with reality. Learning to do so without disturbing the tentative, informal exploration that good talk becomes is a matter of awareness and tact. If the group is working confidently and constructively, the teacher will pick up the talk as if he were another member of the group. If the group stumbles over complex planning or fails to see possibilities, the role of the teacher is trying, through discrete questions and comments, to develop a framework that will help them on their way (pp. 34-35).

Hopefully, this study and other studies of a similar nature will provide information and encouragement to

educators to support the extensive use of student language to learn.

The classroom teacher needs to become more involved in changing her language patterns in the classroom and "explore the relationships between child language development and social interaction with others" (Cherry, 1979). Through analysis of her actual language practices (with audio and video recorders perhaps), the classroom teacher should concern herself with improving the classroom environment to maximize the teaching-learning process. Garnica (1979) feels that "Teachers, researchers and others [must] come together to explore how children learn and use language to communicate in educational contexts. Language plays a critical role in all kinds of learning" (p.).

This suggests a complexity in the classroom community that can become confusing unless reliable, practical methods are incorporated for an analysis of all language development with the intentions to expand the language and thus the learning of the students. What seems needed for the language programs for the elementary school child and beyond, is an extensive and intensive awareness by educators that the increased use of student language in the classroom can encourage learning and thought beyond the practices of most classrooms. Experts in all areas of language theory and research are emphasizing the 'need for change'; a shift from teacher-dominated to shared-language use for learning in classrooms.

Suggestions for Further Research

1) The role of the teacher in small-group discussions needs to be explored.
2) Research into possible evaluation of students' use of language for intellectual growth needs to be considered.
3) Further studies are needed to provide information on how the nature of curriculum objectives affect students' use of language to learn.
4) The present study could be replicated to include other curriculum subjects.
5) The present study could be replicated with a larger sample to determine if the findings obtained represent a general trend in student use of language to learn.
6) A study could explore the similarities and differences of language use by students in the in-school and out-of school context.
7) Other grade five classes and other grade levels could be studied in order to explore the use of language to learn by other age levels, by different sexes, students of different abilities and students of different backgrounds.
8) Research could be considered that would support the programs and classroom teachers involved in shifting to student control of language for learning.

Concluding Statement

Grade five students are capable of using their own language to learn. They possess a variety and sophistication of language strategies that can organize and transcend their thoughts about the world.

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APPENDICES

APPENDIX A

Discussion Resources for Current Events

Session One - Injustice #1

1. What is injustice?

2. Have you ever had injustice happen to you? Tell us about it.

3. Do you know of injustice that has happened to others? Tell us about it.

4. What can we (you - me) do about injustice?

POOR COPY
COPIE DE QUALITEE INFERIEURE

APPENDIX B

Discussion Resources for Current Events

Session Two - Play

APPENDIX B

The students were given one tape-recorder and asked to make up a play about injustice. The instructions were:

1) One member of the group is to be the victim.
2) One member of the group is to be a lawyer.
3) One member of the group is to be a judge.
4) One member of the group can be either a friend, parent or enemy of the victim.

Pretend you are all in court before the judge. Decide if the victim has had an injustice happen to him.

APPENDIX C

Discussion Resources for Current Events

Session Three - Bus Strike

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APPENDIX D

Discussion Resources for Current Events

Session Four - Nurses' Strike

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APPENDIX E

Discussion Resources for Current Events

Session Five - Injustice #2

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APPENDIX F

Discussion Resources for Social Studies

Session One - Textbook Notes on Fur Trade

Students Were Read a Xerox Sheet on the Fur Trade in New France.

Students Were Read a Xerox Sheet on the Features of the Fur Trade.

APPENDIX G

Discussion Resources for Social Studies

Session One - Task Sheet for Fur Trade

1. What does discovery mean?

2. What does exploration mean?

3. The only people living in Canada at one time were the Indians. Then the French started exploring Canada. Then the English started exploring Canada.

   a. You tell some reasons why you think the French started exploring Canada. Does your group agree or disagree with you?

   b. If the fur trade was a reason for exploring Canada:

      Tell why you think furs would be a reason.

      Tell what you think monopoly means.

      Tell what you think staple means.

      Tell what you think colony means.

4. Make some guesses about events, people, problems or other factors that might have occured because of the need for furs. Pretend or imagine it if you were Champlain - The Founder of New France.

APPENDIX H

Discussion Resources for Social Studies

Session Two - Task Sheet for Fur Trade

TAKE YOUR TIME

Pretend you had to tell the king of France about the fur trade in New France.

a) Tell him about the supply of furs.

b) Tell him about the demand for furs.

c) Tell him about the competition to the fur trade.

d) Tell about the rising costs in New France.

e) Tell him about the costs of production in New France.

f) Tell him some ways you think the king could help the fur trade.

g) Tell the king why you want a monopoly for the French fur trade.

h) Tell the king how he could help improve the stability of the economy in New France.

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a) Tell the king how you are going to expand the fur trade. Don't forget to tell him what all the problems are and where you are going, what you are going to need to help explore for new furs!

APPENDIX I

Discussion Resources for Science

Session One - Task Sheet for Budding Twigs

BUDDING TWIGS

Before you are several varieties of twigs.

Discuss the following points and questions with your group.

1) Can you name the different parts of a twig? What is the purpose of each part?

2) Can you arrange the twigs from youngest to oldest? Tell why you think the twigs are in order.

3) Talk about the buds on the twigs.

   a) their shapes - why? how?
   b) their arrangements on the twigs
   c) their variety of colors
      coverings
      textures
   d) their purposes
   e) what will happen to each bud
   f) any other important points about buds

4) Draw a picture and write a group story about 'buds'.

APPENDIX J

Discussion Resources for Poetry

Session One - Three Poems and Questions

What do you think these poems mean? Why?

How do the poems make you feel? Why?

What parts of the poems do you think - mean the same?
- mean something different?
- How? Why?

Discuss these questions using all three poems.

Do any of the poems remind you of something?
What? Why? When? Where? How?

Tell us about it.

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APPENDIX K

Discussion Resources for Mathematics

Session One - Problem-Solving Questions

#1

Our city police department has 15 cars and motorcycles. The total number of wheels on the cars and motorcycles is 42. (A car has 4 wheels and a motorcycle has 2 wheels.) How many police cars does our police department have?

#2

Example 2. A farmer has some hens and rabbits. These animals have 8 heads and 22 feet. How many hens and rabbits has the farmer?

#3

Example 1. Three cans of beef soup cost 51c. How much do 12 cans cost?

#4

10

O	O	I	O	I	O

My age this year is a multiple of 7 and next year it will be a multiple of 5. If I am not yet 50 can you say how old I am? If I am also over 30, can you say how old I am?

#5

12

O	O	I	I	O	O

If each of four people shakes hands once with each of the other three, how many handshakes will there be? How many if there are five people?

Is there an easy way of working out the number of handshakes for any number of people?

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APPENDIX L

Samples of Student Worksheets in Problem-Solving Mathematics

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APPENDIX M

Discussion Resources for Science

Session Two - Layout of Twig Game

Before you are several twigs
Choose a twig - describe it (without using the number) and tell which box you put it in.

APPENDIX N

Group Five's Discussion

of Nurses' Strike

APPENDIX N

Code D

Lesson IV Group 5

Maggie: But you see . . . you're talking about is that mmm . . . no just listen. Okay, compare a cashier . . . register . . . cashier person that works full time . . . 24 hours and. . . .

Pam: Think of the calluses on the fingers.

Maggie: But just listen.

Pam: Yeah, I know but (unclear).

Maggie: Let's compare it to the nurse. If you want to be a nurse you save lives being a nurse . . . right? You save lives being a nurse right?

Pam: Yeah.

Maggie: And you have to study for a lot to be a nurse. For a cashier you just sort' keep on . . . they give you the money for the food and everything. That is an easy job but not (right) really once you compare it to five years difference.

Pam: I know.

Maggie: Because it only takes you about two years or something to be. . . .

Pam: To be a cashier.

Maggie: Yeah, but the cashier has to memorize the numbers and everything and its hard to do it.

Kate: So if she's going like that really slow . . . then the customer's gonna go "Come on, hurry up, I wanna' go" and everything.

Maggie: And they're . . . they're gonna' go outa' business or something. But a nurse saves lives, right?

Pam: Yeah, I know that . . . like I wanna' become a doctor myself . . . (I'm going to gast) but it's still not ah . . . I don't think . . . like . . . the pay a nurse gets the same as . . . ah. . . .

Maggie: A full time.

Pam: As a full time cashier but a nurse has to work more but a cashier doesn't.

(?): So why doesn't a nurse just go down to a cashier and a cashier go up to a nurse and they'll still be. . . .

Maggie: Because you know . . . Pam you couldn't walk into a shop and start doing cashier and serving people . . . even if you were older and if you never touched the thing, you would never know how to do it . . . right? Because it says sub-total . . . say you have to take per-cent off . . . like it's 40% off . . . you don't know how to do all this stuff right . . . you have to study it.

Pam: Yeah, I know but that's . . . that's maybe even more.

(?): Know how much money.

Pam: Yeah, you have to know money.

Maggie: 'cause you might know money now.

Pam: If you're a nurse you have to learn like all the body.

Maggie: But you might. . . .

Pam: You have to learn bodies if you're a nurse and you have to know how to do the. . . .

Maggie: Yeah, I know. But you might . . . but you might know how to do money now but when you grow up it's sometimes difficult to do change.

Pam: Yeah, I know but listen . . . listen. . . .

Maggie: And it's (unclear) like this.

Pam: Listen to me . . . this is what I'm trying to say . . . this is what I'm trying to say . . . I'm trying to say that nurses, you gotta' study the body, you gotta' do this, you gotta do that [why? M] and you gotta' do that . . . for a cashier all's ya' gotta' do is memorize[no M] the keys . . . and memor . . . and know how to give change.

Maggie: No you don't. There's a lotta' other stuff you've gotta' do. You have to memorize the keys and you gotta' know . . . ah . . . if you work in a shop . . . say in a shop where you work or in the supermarket . . . you have to bag stuff or whatever . . . or if you don't have to but it's still a lot of work . . . because like you know . . . hmm . . . you don't sit here.

Kate: Yeah, I know but it doesn't take as many years . . . it doesn't take as many years.

Pam: 'cause you don't learn much but if you're a nurse you have to learn a way more than like . . . and how the body works, and how and all that stuff.

Maggie: But that takes. . . .

Kate: You're agreeing with her?

Pam: Yeah!

Maggie: But that takes longer.

Pam: It takes longer. But I'm agreeing with Kate.

Maggie: Well, I don't care who you're agreeing with. . . .

Kate: If you were a nurse you have to find . . . you'd have to study eight years, right?

Maggie: Right.

Kate: It takes eight years to study for a nurse.

Pam: Well, well, really six years and two years of intern.

Maggie: But look . . . but look Kate, if you had a choice to be a cashier or a nurse . . . anyone could pick the same one 'cause they practically mostly get the same pay. Well, I don't think they get the same pay.

Pam: They get the same pay.

Kate: But it says right here in the newspaper article.

Maggie: It says a five year nurse earns about as much as a full time supermarket . . . but that's a five year nurse . . . a <u>five year</u> nurse.

Pam: Yeah, I know but. . . .

Kate: Plus if you work.

Maggie: It says here, it says here a five year nurse earns about as much as a full-time supermarket cashier or shelf stacker. That means you have to be in it for five years or something.

Pam: A five year nurse could be a . . . five year cashier.

Maggie: Right.

Kate: Right.

Maggie: So it's the same thing but a cashier . . . they get the same but it still (unclear) have to be. . . .

Kate: But a nurse has to learn more.

Pam: You mean you're trying to tell me that the cashier's harder than a nurse?

Maggie: Noooo.

Pam: Then what are you trying to tell us then?

Maggie: But you're trying to tell me a nurse is harder than cashier . . . way easier.

Pam: Yeah.

Maggie: It not that easier Pam.

Pam: A nurse is way harder than a cashier.

Kate: Way harder.

Maggie: But not sometimes . . . if you're just first there.

Pam: But if . . . but if . . . just listen. . . .

Maggie: No . . . no . . . all you do is first . . . first you don't have . . . all some people do is work at the desk . . . right . . . and they say . . . okay . . . ah . . . they come in and say "Which room is Mr. so and so in?" And they tell them right and

they do all the things . . . just like that . . . and then you can get up to five years of nursing so they can shift again to something else.

APPENDIX O

The Language of Mathematics

Group 4

Shel: You don't have to draw a real car, just put some wheels on. . . .

Sunny: Okay. I'll put a circle equals cars eh (counts) . . . two, three, four, five, six, seven and I'll put an X for. . . .

(microphone troubles)

Sunny: But the only trouble is how we're supposed to figure this out . . . there isn't any way to figure it out. . . . We need more information.

Shel: Look, there is a way.

Claude: (reads again). Nothing. It says our police department has fifteen cars and motorcycles. . . .

Sunny: Yeah, fifteen cars and motorcycles put together. . . .

Shel: Right.

Sunny: Right . . . see. . . .

Claude: So there's fifteen cars and motorcycles . . . that's the answer, fifteen.

Sunny: Okay, I'll put it there. . . .

Shel: Fifteen cars and fifteen motorcycles equals fifteen vehicles . . . I mean thirty.

Sunny: Thir-ty.

Alta: Yeah . . . but how many police cars does the police department have?

Sunny: The answer is. . . .

Claude: Wait . . . if you have . . . if you have . . . forty-two . . . four and two is what? Six, right? So six goes into forty-two how many times? Seven, right?

Group 5

Kate: It can't be.

Maggie: No, no, no. . . .

Kate: It doesn't necessarily have to be.

Maggie: Yeah, but you have to get forty-two one way.

Kate: It has to be forty-two . . . that forty-two . . . we've forty-eight here now . . . twelve times what?

Maggie: Twelve times three gives you. . . .

Kate: We already did that . . . right here.

Pam: Thirty-six.

Kate: Thirty-six. Twelve times three is the most you can ever get.

Maggie: No, you have to be able to get forty-two . . . twelve times three wait . . . twelve twos are twenty-four . . . twelve times three. . . .

Pam: Well you can't . . . it's impossible.

Maggie: I can help . . . you can help us . . . thank you.

Kate: Did you count these things?

Maggie: Those are motorcycles?

Kate: Motorcycles. . . .

Pam: Two can go into forty-two. . . .

Kate: Four, six, eight, ten, twelve.

Maggie: That's twelve . . . okay, that's twelve (checks pencil).

Kate: Could somebody please help me?

Group 6

Liz: Cah we just try this?

Researcher: Try? Yeah . . . go ahead . . . you're supposed to be doing it . . . I just want. . . .

Sally: Did anyone else tell the. . . .

Researcher: I'll say it's easy . . . but it's. . . .

Liz: Okay . . . you guys help me count backwards.

Sally: Forty-two . . . forty-three.

Jan: Sixteen?

Liz: No . . . from eighty 'cause . . . okay.

Sally: Okay eighty . . . ninety-eight . . . of eighty . . . seventy-eight. . . .

Liz: Seventy-eight, seventy-six, seventy-four, seventy-two, seventy, sixty-eight, sixty-six, sixty-four, sixty-two, sixty, fifty-eight, fifty-six, fifty-four, fifty-two, fifty. . . .

Sally: They're all motorcycles then . . . they've only got two wheels. . . .

Jan: The cars must be dragging on the ground. . . .

Liz: No, just keep going . . . fifty, forty-eight, forty-six, forty-four, forty-two. . . .

Sally: Forty-two . . . so . . . those can be motorcucles and plus the rest could be cars . . . ah . . . I don't know what these are. . . .

Liz: There's two . . . there's one car. . . .

Sally: Yeah. . . .

Liz: That's two cars, three cars . . . four cars, five, six cars. . . .

Sally: Six cars and three motorcycles. . . .

Group 7

Jack: But you can do it any way . . . you can get it with a whole bunch of different answers.

Harry: There are seven police cars and seven . . . umm. . . .

Jack: But you can get a whole bunch of answers. . . .

Gail: So you don't know . . . seven times six is forty-two so there must be seven blah bas . . . and. . . .

Jack: Seven times. . . .

Harry: There's seven . . . forty-two wheels . . . so if you get ( ) seven seven. . . .

Gail: Seven times seven is forty-nine.

Harry: So how many police cars does the police department have? . . . seven.

Jack: Oh . . . oh . . . there's twenty-one thingmajigs all together. . . .

Harry: No, there are forty-two . . . ah . . . wheels.

Jack: No, how many. . . .

Gail: Vehicles.

Jack: Yeah . . . all together . . . twenty-one? . . . . Well you can have . . . twenty . . . umm . . . twenty. . . .

Harry: There are fourteen vehicles.

Jack: Oh yeah . . . that's right too. Well . . . there can be fif. . . . (they all laugh).

Jack: Well you can have . . . how many vehicles in all

then? There?